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Appeal No. 2017-2145

United States Court of Appeals

for the

Federal Circuit

CISCO SYSTEMS, INC.,

Plaintiff-Appellant,

– v. –

ARISTA NETWORKS, INC.,

Defendant-Appellee.

ON APPEAL FROM THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA IN
CASE NO. 5:14-CV-05344-BLF, JUDGE BETH LABSON FREEMAN

NON-CONFIDENTIAL JOINT APPENDIX

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03:00:50 1   CAN YOU EXPLAIN WHAT THE HELP DESCRIPTIONS ARE?

03:00:52 2   A.   SURE.

03:00:53 3   HELP DESCRIPTIONS ARE AT THE COMMAND LINE BEING ABLE TO

03:01:00 4   TYPE A COMMAND OR A PORTION OF A COMMAND FOLLOWED BY A QUESTION

03:01:04 5   MARK AND THEN YOU CAN GET A STRING OF TEXT THAT MIGHT REMIND

03:01:07 6   THE PERSON WHAT THEY NEED OR SOME ADDITIONAL INFORMATION.

03:01:12 7   CLEARLY, THERE ARE QUITE A FEW COMMANDS. IT'S COMPLEX

03:01:18 8   PIECE OF HARDWARE THAT REQUIRES CONFIGURATION. SO SOMETIMES A

03:01:22 9   LITTLE INFORMATION TO THE OPERATOR IS HELPFUL.

03:01:25 10   SO THERE'S AN EXAMPLE HERE, SNMP, SERVER, HOST VERSION,

03:01:30 11 QUESTION MARK. AND IT PROVIDES THE RESPONSE, SNMP VERSION TO

03:01:35 12 USE FOR NOTIFICATION MESSAGES.

03:01:39 13 Q.   AND THEN I WANT TO MOVE FORWARD TO THE NEXT ONE WHICH IS

03:01:42 14   THE MODES AND PROMPTS.

03:01:45 15   NOW CAN YOU JUST BRIEFLY EXPLAIN TO US THE ARRANGEMENT OF

03:01:50 16 THE MODES AND PROMPTS THAT WE ARE TALKING ABOUT HERE IN THIS

03:01:52 17 CASE?

03:01:52 18 A.   SURE. THE DIFFERENT MODES, I THINK MR. LOUGHEED TESTIFIED

03:01:57 19 AND DESCRIBED THIS ON THE FIRST DAY. BUT WITHIN A ROUTER,

03:02:02 20 THERE IS THE ABILITY TO HAVE DIFFERENT MODES. YOU START OFF IN

03:02:07 21 AN EXECUTION MODE WHERE THE PROTECTION IS FAIRLY MINIMAL.

03:02:12 22   AND SO THE KINDS OF THINGS THAT YOU CAN DO ARE CHANGE

03:02:16 23 TERMINAL SETTINGS, PERFORM BASIC TESTING AND DISPLAYING

03:02:20 24 INFORMATION.

03:02:21 25   THERE'S A FURTHER KIND OF PRIVILEGED MODE, KIND OF AN

03:02:25 1   ADDITIONAL LEVEL OF SECURITY, THAT'S CALLED PRIVILEGED EXEC.

03:02:28 2   AND THAT'S WHERE YOU'RE ABLE TO DO MORE OF THE CONFIGURATION OF

03:02:32 3   THE DEVICE.

03:02:34 4   THERE'S TWO DIFFERENT MODES, AND THE WAY THAT THESE MODES

03:02:38 5   ARE ORGANIZED IS YOU START OFF AT USER, YOU CAN THEN GO INTO

03:02:43 6   THE PRIVILEGED MODE AND THEN THE NEXT STEP IS GLOBAL

03:02:46 7   CONFIGURATION, WHERE YOU CAN CHANGE THINGS ABOUT THE WAY THE

03:02:48 8   ENTIRE DEVICE WORKS.

03:02:52 9   OR THEN THERE'S A FOURTH MODE INSIDE OF THAT CALLED THE

03:02:55 10   INTERFACE CONFIGURATION MODE, AND THAT'S WHERE YOU CAN

03:02:57 11   CONFIGURE THINGS FOR A PARTICULAR INTERFACE.

03:03:01 12   AT SOME POINT WE WILL HAVE THE DEMONSTRATIVES OF THE CISCO

03:03:04 13   AND ARISTA SWITCHES AND ROUTERS AND EACH OF THE PLACES YOU CAN

03:03:08 14   PLUG IN A CABLE THAT'S CALLED AN INTERFACE. AND THE REASON FOR

03:03:11 15   THAT IS YOU CAN CONFIGURE INTERFACES ON A ROUTER OR SWITCH TO

03:03:16 16   DO THINGS DIFFERENTLY THAN OTHER INTERFACES.

03:03:19 17   AND IT GIVES YOU SOME NICE FLEXIBILITY IN HOW THE ROUTER

03:03:23 18   AND SWITCH WORKS.

03:03:24 19   SO THERE'S REALLY THOSE FOUR MODES AND THEN ASSOCIATED

03:03:28 20   WITH EACH ONE IS A CORRESPONDING PROMPT. AND THE PROMPT

03:03:31 21   PROVIDING AN INDICATION TO THE USER AS TO WHAT MODE THEY'RE IN

03:03:34 22   SO THEY HAVE AN UNDERSTANDING OF WHAT THEIR CAPABILITIES ARE IN

03:03:38 23   THAT MODE.

03:03:41 24   Q.   AND THEN FINALLY THE LAST THING YOU MENTIONED WERE THE

03:03:45 25   USER MANUALS.

03:05:18 1   CRITERIA AND ANOTHER ONE USED SOMETHING ELSE.

03:05:21 2   AND ALL OF THIS INFORMATION GOES TO HELPING ME FORM AN

03:05:26 3   OPINION WHETHER IT'S PART OF THE PROCESS OF CISCO COMING UP

03:05:30 4   WITH THESE COMMANDS, WHETHER THERE WAS CREATIVITY IN WHAT THOSE

03:05:34 5   COMMANDS IT WERE THAT WERE ULTIMATELY SELECTED.

03:05:38 6   Q.   AND THE ANALYSIS THAT YOU JUST DESCRIBED OF THE PROCESS,

03:05:42 7   WHAT CONCLUSION DID THAT LEAD YOU TO?

03:05:45 8   A.   ULTIMATELY, I REACHED THE CONCLUSION THAT FOR THE

03:05:50 9   MULTIWORD COMMANDS, THE HELP DESCRIPTIONS, THE COMMAND PROMPTS,

03:05:55 10   THE OUTPUTS, THE MANUALS, IT WAS ALL A CREATIVE PROCESS AND THE

03:06:01 11   RESULT OF THAT WAS A CREATIVE OUTPUT.

03:06:04 12   Q.   NOW, I WANT TO TALK ABOUT SOME OF THE THINGS THAT YOU

03:06:11 13   RELIED ON TO FORM LATE THAT OPINION.

03:06:13 14   AND IF WE CAN PULL UP EXHIBIT 851 WHICH IS IN EVIDENCE,

03:06:23 15   MR. FISHER. AND YOU SHOULD HAVE THAT, DR. ALMEROTH, IN YOUR

03:06:26 16   BINDER.

03:06:27 17   A.   YES, SIR.

03:06:28 18   Q.   AND CAN YOU REMIND US WHAT EXHIBIT 851 IS, PLEASE?

03:06:33 19   A.   851 IS THE PARSER-POLICE DOCUMENT. I BELIEVE THAT

03:06:37 20   MR. REMAKER TESTIFIED ABOUT IT, BUT IT'S ONE OF THE DOCUMENTS

03:06:40 21   THAT I RELIED ON IN REACHING MY CONCLUSIONS.

03:06:44 22   Q.   AND HOW DID THIS DOCUMENT FORM YOUR OPINIONS OR INFORM

03:06:49 23   YOUR OPINIONS?

03:06:50 24   A.   IT HELPED ME UNDERSTAND WHAT THE PROCESS WAS AND SOME OF

03:06:57 25   WHAT WAS HAPPENING AS PART OF THE PROCESS.

03:16:22 1   PRONOUNCE THE LETTERS, IT'S NOT A REAL WORD.

03:16:25 2   BUT IT'S VERY COMMON FOR ENGINEERS TO TALK ABOUT ACL'S.

03:16:31 3   AFTER A WHILE, THEY USE ENOUGH OF THESE, IT STARTS TO SOUND

03:16:35 4   LIKE A FOREIGN LANGUAGE, BUT IT DOES MAKE SENSE TO THE

03:16:37 5   ENGINEERS WHO SEE THESE COMMANDS.

03:16:39 6   Q.   AND ACL, WHAT DOES THAT STAND FOR?

03:16:42 7   A.   ACCESS CONTROL LISTS, ACL.

03:16:44 8   Q.   NOW IF WE MOVE FORWARD, IN TERMS OF YOUR ANALYSIS, DID YOU

03:16:51 9   DECIDE WHETHER THE ARRANGEMENT PLAYS INTO THE CREATIVITY PART?

03:16:54 10   A.   I DO. OR I DID. AND IT DOES PLAY A ROLE.

03:17:03 11   IN FACT, IF YOU REMEMBER TO JUST TWO MINUTES AGO WHERE I

03:17:07 12   TALKED ABOUT THE PARSER-POLICE MANIFESTO THAT BOX NUMBER ONE

03:17:11 13   WAS ABOUT EXTENSIBLE. AND PART OF THAT HAS TO DO WITH THE WORD

03:17:15 14   ORDER THAT YOU CAN USE.

03:17:16 15   AND SO YOU CAN USE SOMETHING LIKE SHOW IP ACCESS LISTS,

03:17:22 16   AGAIN IS OUR EXAMPLE. AND REALLY YOU CAN ORGANIZE THOSE IN ANY

03:17:26 17   WAY.

03:17:27 18   AND ONE ENGINEER MIGHT SAY THE EMPHASIS HERE IS ON

03:17:30 19   DISPLAYING INFORMATION. ANOTHER ONE MIGHT SAY, WELL THE

03:17:33 20   EMPHASIS REALLY IS ON ACCESS LISTS, SOY I COULD CREATE A

03:17:38 21   HIERARCHY CALLED ACCESS LISTS, I COULD IDENTIFY WHAT THE

03:17:42 22   PROTOCOL IS NEXT, IP OR OTHER KINDS OF ACCESS LISTS, AND THEN A

03:17:46 23   VERB TO SHOW WHAT THE CONFIGURATION IS, CONFIG TO CONFIGURE

03:17:52 24   THEM.

03:17:53 25   SO THE WORD CHOICE AND THE ORDERING HERE IS SOMETHING

03:17:56 1   THAT'S A -- I'M SORRY, THE WORD ORDER IS A CREATIVE ENDEAVOR.

03:18:00 2   Q.   SO THEN IN TERMS OF THE ARRANGEMENT OF THE WORDS, HOW DOES

03:18:05 3   THAT PLAY INTO THE ORGANIZATION OF THESE MULTIWORD COMMANDS?

03:18:09 4   A.   SURE.   ON THIS DEMONSTRATIVE, IT'S BACK TO THE

03:18:12 5   REPRESENTATION OF SHOW IP ACCESS LISTS BECAUSE "SHOW" IS FIRST,

03:18:20 6   IT GOES INTO THE "SHOW HIERARCHY."

03:18:24 7   THE NEXT DEMONSTRATIVE SHOWS YOU COULD HAVE ACTUALLY PUT

03:18:26 8   IT INTO A DIFFERENT HIERARCHY.   YOU COULD HAVE PUT IT INTO THE

03:18:30 9   IP HIERARCHY SO THEN THE COMMAND WOULD BE IP SHOW ACCESS LIST.

03:18:34 10   EITHER WOULD BE POSSIBLE.   EITHER WOULD BE AN OPTION.

03:18:37 11   THERE'S NO CONSTRAINT OR LIMITATION THAT IT'S ONE VERSUS THE

03:18:40 12   OTHER.

03:18:41 13   AND SO THE FACT THAT WE HAVE IT NOW, WAS BASED ON A

03:18:47 14   CREATIVE CHOICE BY THE ENGINEER WHO DEVELOPED IT AT THAT TIME.

03:18:52 15   Q.   NOW BASED UPON YOUR REVIEW IN THIS CASE, DID YOU BECOME

03:18:55 16   FAMILIAR WITH SOME OF THE CONSIDERATIONS FOR DECIDING TO

03:18:59 17   STRUCTURE A COMMAND ONE WAY VERSUS ANOTHER WAY?

03:19:02 18   A.   YES.

03:19:02 19   Q.   AND CAN YOU EXPLAIN TO US WHAT THAT IS?

03:19:05 20   A.   SURE.

03:19:06 21   SO FIRST OF ALL, THERE ARE LOTS OF DIFFERENT

03:19:08 22   CONSIDERATIONS AND SOME PEOPLE WILL CONSIDER DIFFERENT

03:19:12 23   CONSIDERATIONS DIFFERENTLY.

03:19:14 24   I THINK THE ONE THAT I'VE HIGHLIGHTED SO FAR IS THE USE OF

03:19:18 25   THE HYPHEN, SOME PEOPLE SAY IT'S GOOD, SOME PEOPLE SAY IT'S

03:19:21 1   BAD. THE MANIFESTO SAID NOT TO USE HYPHENS.

03:19:29 2   BUT IF YOU GO BACK TO SLIDE 11, FOR EXAMPLE, THE FIGURE

03:19:35 3   THAT DISPLAYED ALL THE COMMANDS, THE 506 AT ISSUE, THERE'S LOTS

03:19:40 4   OF COMMANDS THAT HAVE HYPHENS.

03:19:42 5   SO IN SOME INSTANCES IT'S A DESIGN CONSIDERATION WHETHER

03:19:45 6   TOO USE A HYPHEN OR NOT. IT'S A CONSIDERATION WHETHER TO USE

03:19:50 7   ONE WORD VERSUS ANOTHER OR NOT.

03:19:52 8   IN SOME CASES THE RECOMMENDATIONS AS DESCRIBED IN THE

03:19:57 9   MANIFESTO ARE ADHERED TO, SOMETIMES THERE'S EXCEPTIONS, BUT

03:20:03 10   ULTIMATELY WHAT YOU HOPE TO HAVE IS A CONSISTENT MEMORABLE

03:20:07 11   COMMAND-LINE INTERFACE INSTEAD OF MULTIWORD COMMANDS.

03:20:11 12   Q.   IF WE COULD GO TO SLIDE 26, MR. FISHER.

03:20:15 13   SO NOW I WANT TO TALK ABOUT THE COMMAND OUTPUTS THAT YOU

03:20:19 14   DESCRIBED A BIT AGO AND TALK ABOUT YOUR ANALYSIS OF THE CREDIT

03:20:24 15   ACTIVITY THERE, OKAY.

03:20:25 16   A.   CERTAINLY.

03:20:27 17   Q.   SO WHAT DID YOU DO TO DO THAT ANALYSIS?

03:20:31 18   A.   SO FOR THE SCREEN OUTPUTS, WHAT I WAS ABLE TO DO WAS ALSO

03:20:35 19   LOOK AT THE USER MANUALS, LOOK AT THE SAME KINDS OF E-MAIL

03:20:38 20   EXCHANGES WHERE THERE WERE DISCUSSIONS ABOUT WHAT SOME OF THE

03:20:43 21   OUTPUTS SHOULD BE, THE SAME KINDS OF MATERIALS THAT I HAD

03:20:48 22   DISCUSSED PREVIOUSLY THAT I HAD CONSIDERED AS PART OF THIS

03:20:50 23   QUESTION.

03:20:51 24   Q.   AND SO YOU TALKED ABOUT THIS EXAMPLE BEFORE WHERE YOU TYPE

03:20:57 25   IN A COMMAND AND THEN YOU GET AN OUTPUT BACK.

03:21:00 1   CAN YOU EXPLAIN TO US WHAT YOU BELIEVE TO BE THE

03:21:06 2   CREATIVITY IN THE OUTPUT?

03:21:08 3   A.   SURE.   THE CREATIVITY HERE, IF YOU CAN SEE THE WORDS ON

03:21:13 4   THE SCREEN HERE, THERE REALLY IS A LOT OF VARIABILITY IN HOW

03:21:19 5   YOU CAN ORGANIZE THIS INFORMATION.   THIS IS FOR THE COMMAND

03:21:23 6   "SHOW SPANNING-TREE," AND IT PROVIDES SOME INFORMATION ABOUT

03:21:28 7   WHAT PROTOCOL IS ENABLED.

03:21:31 8   AND THEN THERE ARE DIFFERENT FIELDS, AND THEN AFTER THE

03:21:33 9   FIELDS ARE INFORMATION ABOUT THE STATUS OF THE ROUTER.

03:21:37 10   NOW THE FIELDS THEMSELVES AND THE NAMES OF THE FIELDS

03:21:41 11   DON'T CHANGE FROM ONE INSTANCE TO THE NEXT IF YOU WERE

03:21:51 12   EXECUTING THESE COMMANDS ON AN OPERATING ROUTER, BUT THE VALUES

03:21:54 13   THAT GO INTO THOSE FIELDS.

03:21:56 14   NOW IN AND INSTANCE THE VALUES HAVE THE SAME UNITS.   IT

03:22:00 15   MIGHT MEGABITS PER SECOND IN THE COUNTER OF PACKETS THAT WERE

03:22:03 16   LOST.

03:22:03 17   SO ALL OF THE INFORMATION THAT'S DISPLAYED CAN BE REALLY

03:22:06 18   ORGANIZED IN ANY FASHION.   YOU COULD DO IT IN TABLES, YOU COULD

03:22:09 19   DO IT IN LINES.   THERE REALLY IS A LOT OF CREATIVITY INVOLVED

03:22:13 20   IN DECIDING AND ORGANIZING THE INFORMATION HERE.

03:22:18 21   Q.   NOW IN CONNECTION WITH YOUR ANALYSIS OF THE OUTPUTS, DID

03:22:21 22   YOU DETERMINE WHETHER THERE WERE ANY SIGNIFICANT CONSTRAINTS ON

03:22:25 23   HOW YOU COULD CONSTRUCT THESE OUTPUTS?

03:22:27 24   A.   I DID.   AND THERE REALLY AREN'T.   YOU CAN INCLUDE ANY

03:22:33 25   INFORMATION, YOU CAN ORGANIZE IT IN ANY WAY.

03:22:37 1   THERE MIGHT BE CONSTRAINTS LIKE YOU HAVE TO USE ENGLISH OR

03:22:41 2   SOMETHING LIKE THAT, BUT THAT'S NOT REALLY A SIGNIFICANT

03:22:44 3   CONSTRAINT THAT IMPINGES ON THE ABILITY OF THE PERSON DESIGNING

03:22:49 4   THIS OUTPUT TO EXERCISE CREATIVITY IN WHAT THOSE CHOICES MIGHT

03:22:57 5   BE.

03:22:57 6   Q.   NOW I WANT TO GO FORWARD TO THE HELP DESCRIPTIONS. YOU

03:23:00 7   DESCRIBED THOSE FOR US.

03:23:02 8   WHAT DID YOU DO IN CONNECTION WITH YOUR ANALYSIS OF THE

03:23:07 9   HELP DESCRIPTIONS AND THE CREATIVITY THERE.

03:23:10 10   A.   THE ANALYSIS AGAIN, WAS VERY SIMILAR, I CAN LOOK AT THE

03:23:14 11   USER MANUALS.

03:23:15 12   I CAN LOOK AT THE SWITCHES THEMSELVES IN SOME INSTANCES.

03:23:21 13   AND I CAN LOOK AT THE HELP DESCRIPTIONS THAT ARE EXPECTED TO BE

03:23:24 14   PRODUCED ON THE SWITCHES WHEN THEY'RE RUNNING THE OPERATING

03:23:29 15   SYSTEM.

03:23:30 16   AND SO THERE'S AN ANIMATION HERE THAT SHOWS FOR THE

03:23:33 17   COMMAND "SNMP-SERVER HOST VERSION?" AND THEN IT RETURNS THE

03:23:40 18   RESPONSE, "SNMP VERSION TO USE FOR NOTIFICATION MESSAGES."

03:23:46 19   AND MY UNDERSTANDING OF THE PROCESS BY WHICH THOSE ARE

03:23:50 20   CREATED IS CREATIVE. THERE AREN'T REALLY CONSTRAINTS ON WHAT

03:23:56 21   THE USER OR THE PERSON DESIGNING THOSE COMMANDS IS ALLOWED TO

03:24:00 22   INCLUDE IN TERMS OF THE HELP INFORMATION.

03:24:03 23   Q.   NOW I WANT TO MOVE FORWARD TO THE NEXT ELEMENT OF THE USER

03:24:10 24   INTERFACE THAT YOU DESCRIBED WHICH IS THE MODES AND PROMPTS AND

03:24:14 25   THE ARRANGEMENT OF THE MODES AND PROMPTS?

03:24:16 1   A.   YES.

03:24:17 2   Q.   WHAT DID YOU DO IN CONNECTION WITH YOUR ANALYSIS OF THE

03:24:20 3   CREATIVITY THERE?

03:24:20 4   A.   IT'S A SIMILAR KIND OF METHODOLOGY. I LOOKED AT WHAT THE

03:24:25 5   DOCUMENTS WOULD SAY ABOUT MODES AND PROMPTS AND ALSO WHAT THE

03:24:30 6   DOCUMENTS SAY ABOUT THE PROCESS BY WHICH THESE WERE DESIGNED.

03:24:35 7   I REVIEWED DEPOSITION TESTIMONY. I BELIEVE MR. LOUGHEED

03:24:38 8   TESTIFIED ABOUT THIS ON MONDAY.

03:24:43 9   AND SO THE IDEA THAT YOU HAVE THE EXECUTIVE, THE EXEC

03:24:50 10   INTERFACE AND THEN THE PRIVILEGE AND THEN THE GLOBAL

03:24:53 11   CONFIGURATION AND THEN THE INTERFACE CONFIGURATION MODES AND

03:24:57 12   THEN THE CORRESPONDING PROMPTS, THERE'S OTHER WAYS THAT THAT

03:25:01 13   COULD HAVE BEEN ORGANIZED, OTHER NAMES THAT COULD HAVE BEEN

03:25:05 14   USED, AND SO IT'S CLEAR THAT THERE WAS A CREATIVE PROCESS IN

03:25:12 15   THE MODES AND PROMPTS AS WELL.

03:25:13 16   Q.   IN CONNECTION WITH YOUR ANALYSIS OF THE CASE, HAD YOU SEEN

03:25:19 17   ANYTHING TO INDICATE THAT SOMEBODY ELSE BEFORE CISCO HAD THE

03:25:21 18   ARRANGEMENT THAT YOU JUST DESCRIBED OF MODES AND PROMPTS?

03:25:25 19   A.   NO, NOT THOSE FOUR MODES AND PROMPTS THAT ARE AT ISSUE

03:25:28 20   HERE.

03:25:29 21   Q.   NOW JUST SO I UNDERSTAND, SO IS IT POSSIBLE, CAN YOU JUST

03:25:35 22   JUMP FROM THE TOP LEVEL MODE ALL THE WAY DOWN TO THE INTERFACE

03:25:43 23   MODE?

03:25:43 24   A.   NO AS PART OF THE STRUCTURE OF THE MODES AND PROMPTS, THEY

03:25:45 25   ARE NESTED, MEANING YOU HAVE TO BE IN THE FIRST MODE, THE EXEC

03:25:52 1   MODE, AND FROM THERE YOU CAN ONLY GET TO THE PRIVILEGED MODE.

03:25:56 2   THEN ONCE YOU ARE IN THE PRIVILEGED MODE, YOU HAVE TO GO

03:25:58 3   TO THE GLOBAL CONFIGURATION AND THEN TO THE INTERFACE

03:26:01 4   CONFIGURATION MODE.

03:26:01 5   SO THEY ARE NESTED THAT WAY. AND THAT WAS A CREATIVE

03:26:06 6   DECISION. THEY DIDN'T HAVE TO BE NESTED, YOU COULD GO TO ANY

03:26:10 7   MODE AS AN ALTERNATIVE.

03:26:11 8   AND SO THAT WAS SOMETHING THAT WAS DESIGNED AND SPECIFIED

03:26:15 9   THAT WAY ON PURPOSE.

03:26:17 10   Q.   NOW, I WANT TO GO FORWARD TO SLIDE 29, PLEASE, AND TALK

03:26:27 11   ABOUT THE USER MANUALS; DO YOU SEE THAT?

03:26:29 12   A.   YES.

03:26:30 13   Q.   NOW, IN YOUR -- WHAT DID YOU DO FOR YOUR ANALYSIS OF THE

03:26:35 14   POTENTIAL CREATIVITY OF THE USER MANUALS?

03:26:36 15   A.   HERE AGAIN, I RELIED ON SIMILAR KINDS OF INFORMATION.

03:26:41 16   CLEARLY WHEN YOU HAVE A MULTI HUNDRED PAGE MANUAL THAT'S

03:26:44 17   ESSENTIALLY LIKE A BOOK, THERE'S ALL SORTS OF WAYS IN WHICH THE

03:26:48 18   INFORMATION CAN BE ORGANIZED WITHIN THAT MANUAL, WHAT THE

03:26:53 19   INFORMATION SAYS EXACTLY, THE WORD CHOICES THAT ARE USED TO

03:26:57 20   DESCRIBE ASPECTS OF THE SWITCH OR ROUTER.

03:27:01 21   IT REALLY IS ON PAR WITH A BOOK. AND YOUR ABILITY TO PUT

03:27:08 22   INTO INFORMATION IN THAT MANUAL THAT YOU WANT.

03:27:10 23   Q.   SO THEN IN TERMS OF THE FOUR ELEMENTS OF THE USER

03:27:14 24   INTERFACE, LET'S TAKE THAT, THOSE FIRST. DID YOU REACH ANY

03:27:18 25   CONCLUSION AS TO THE ORIGINALITY AND CREATIVITY OF THOSE

03:27:23 1   ELEMENTS?

03:27:23 2   A.   YES.   FOR THE USER INTERFACE, THAT INCLUDED THE FOUR

03:27:27 3   COMPONENTS, THE MULTIWORD COMMANDS, THE OUTPUTS, THE HELP

03:27:32 4   DESCRIPTIONS, THE MODES AND PROMPTS, AND THAT WAS THE USER

03:27:36 5   INTERFACE FOR EACH OF IOS, IOS XR, IOS XE, AND NX-OS, I HAD

03:27:43 6   FOUND THAT THERE WAS CREATIVITY IN THE WAY THAT ALL FOUR OF

03:27:49 7   THOSE COMPONENTS WERE DETERMINED.

03:27:51 8   Q.   AND DID YOU ANALYZE, IN TERMS OF WHAT WE JUST WALKED

03:27:55 9   THROUGH IN DESCRIBING YOUR ANALYSIS, DID YOU DO THAT FOR EACH

03:27:58 10   OF THE USER INTERFACES AT ISSUE IN THIS CASE?

03:28:00 11   A.   YES, I DID.

03:28:02 12   Q.   AND THEN WITH RESPECT TO THE USER DOCUMENTATION, THE

03:28:07 13   MANUALS THAT ARE AT ISSUE THEMSELVES, DID YOU REACH A

03:28:10 14   CONCLUSION ABOUT THE ORIGINALITY AND CREATIVITY THERE?

03:28:13 15   A.   YES, I DID.

03:28:14 16   FOR THE USER MANUALS THAT HAVE BEEN IDENTIFIED, I ALSO

03:28:18 17   DETERMINED THAT THEY WERE -- THE PROCESS BY WHICH THEY WERE

03:28:25 18   DEVELOPED WAS A CREATIVE PROCESS AND THAT ULTIMATELY THE

03:28:31 19   PRODUCTS THEMSELVES WERE CREATED.

03:28:33 20   Q.   AND WAS THAT TRUE WITH RESPECT TO ALL THE MANUALS THAT YOU

03:28:35 21   LOOKED AT?

03:28:36 22   A.   YES, IT IS.

03:28:37 23   Q.   NOW, I WANT TO GO FORWARD TO SLIDE 32, MR. FISHER.   THANK

03:28:45 24   YOU, SIR.

03:28:46 25   SO LET'S TALK ABOUT WHAT YOU DESCRIBED AS THE SECOND

03:31:41 1   COMPLAINT, THE INTERROGATORY RESPONSES, THE DOCUMENTS,

03:31:45 2   DEPOSITION TESTIMONY, INFORMATION AVAILABLE LOOKING AT THE

03:31:50 3   SWITCHES THEMSELVES, TO SEE WHETHER OR NOT THERE WAS EVIDENCE

03:31:55 4   OF COPYING.

03:31:57 5   Q.   NOW CAN YOU GO TO EXHIBIT 295 IN YOUR BINDER?

03:32:19 6   A.   I'VE GOT TEN BINDERS OF EXHIBITS.

03:32:23 7   MR. NELSON: SORRY ABOUT THAT.

03:32:28 8   THE WITNESS: OKAY. I'M THERE.

03:32:30 9   Q.   AND CAN YOU TELL US WHAT EXHIBIT 295 IS?

03:32:33 10 A.   IT'S THE EOS CLI CONVENTIONS AND STYLE GUIDELINES THAT

03:32:38 11 COMES FROM ARISTA.

03:32:39 12 Q.   AND IS THIS SOMETHING THAT YOU CONSIDERED IN FORMING YOUR

03:32:43 13 OPINIONS?

03:32:44 14 A.   IT IS.

03:32:44 15 Q.   AND HOW IS IT THAT THIS INFORMED YOUR OPINION?

03:32:48 16 A.   IT INFORMS MY OPINION, IT'S AS THE TITLE INDICATES, IT'S

03:32:53 17 THE STYLE GUIDE THAT'S TO BE USED WITHIN ARISTA FOR ITS

03:32:58 18 DEVELOPMENT OF COMMANDS.

03:33:04 19   MR. NELSON: AND AT THIS POINT, I MOVE EXHIBIT 295

03:33:06 20 INTO EVIDENCE YOUR HONOR.

03:33:06 21   MR. VAN NEST: NO OBJECTION YOUR HONOR.

03:33:07 22   THE COURT: IT WILL BE ADMITTED.

03:33:10 23 (PLAINTIFF'S EXHIBIT 295, WAS ADMITTED INTO EVIDENCE.)

03:33:10 24 BY MR. NELSON:

03:33:13 25 Q.   SO CAN YOU TELL US WHAT PART OF THIS WAS RELEVANT TO YOUR

03:33:18 1   OPINIONS ON THE SIMILARITY IN ACCESS?

03:33:23 2   A.   SURE.   IF YOU GO TO THE SECOND PAGE --

03:33:27 3   Q.   OKAY.

03:33:28 4   A.   -- AND ABOUT THIS SECTION HERE.   UNDER FOLLOWING THE

03:33:34 5   INDUSTRY STANDARD.   THERE'S A PORTION THAT SAYS, IN LOOKING FOR

03:33:41 6   INDUSTRY STANDARD MODELS TO FOLLOW, PLEASE LOOK IN THE

03:33:43 7   FOLLOWING ORDER OF PREFERENCE: IOS, NX-OS, IOS XR, AND JUNOS.

03:33:52 8   AND WHAT THIS IS SAYING IS IN THE CONTEXT OF THE FIRST

03:33:56 9   PARAGRAPH, I THINK IT'S PROBABLY IMPORTANT THAT I READ THAT AS

03:33:58 10   WELL.   IT SAYS, "THE FIRST AND PROBABLY MOST IMPORTANT

03:34:03 11   CONVENTION IN OUR CLI IS TO FOLLOW THE INDUSTRY STANDARD.   IF

03:34:07 12   THE COMMANDS FOR A GIVEN FEATURE ARE ALREADY OUT THERE IN THE

03:34:11 13   INDUSTRY, WE DON'T ADD VALUE BY COMING UP WITH ANOTHER COMMAND

03:34:16 14   MODEL THAT IS SIMILAR BUT DIFFERENT.   ALL WE ACCOMPLISH IN

03:34:20 15   DOING THAT IS TO MAKE IT HARDER FOR OUR CUSTOMERS TO LEARN HOW

03:34:24 16   TO USE OUR SWITCHES AND ROUTERS."

03:34:26 17   AND SO THE DIRECTION IS TO LOOK AT COMMANDS IN IOS, NX-OS,

03:34:34 18   IOS XR AND JUNOS, IN THAT ORDER.

03:34:37 19   Q.   NOW THE FIRST THREE, IOS, NX-OS, AND IOS XR, CAN YOU

03:34:42 20   REMIND US WHAT THOSE ARE?

03:34:44 21   A.   THOSE ARE CISCO'S USER INTERFACES.

03:34:46 22   Q.   AND ARE THEY AT ISSUE IN THE CASE HERE?

03:34:48 23   A.   YES, SIR.

03:34:48 24   Q.   SO THEN HOW DID WHAT YOU LOOKED AT HERE IN EXHIBIT 295

03:34:54 25   INFORM YOUR OPINION ABOUT ACCESS AND SIMILARITY?

03:41:46 1   MR. NELSON: THANK YOU, YOUR HONOR.

03:41:47 2   Q.   SO DR. ALMEROTH, STAYING ON THIS IDEA OF CONFIGURATION, I

03:41:54 3   MEAN, ARE THERE CONFIGURATION FILES, IS THAT SOMETHING THAT YOU

03:41:58 4   HEARD OF OR CONFIGURATION STRUCTURES FOR THESE SWITCHES?

03:42:04 5   A.   YES. AND HERE'S WHERE THAT COMES INTO PLAY AND BECOMES

03:42:08 6   RELEVANT.

03:42:08 7   AS I HOPE I HAVE CONVEYED THAT A SWITCH IS A VERY COMPLEX

03:42:12 8   PIECE OF HARDWARE, THERE'S LOTS OF CONFIGURATION THAT HAS TO

03:42:16 9   HAPPEN TO THAT SWITCH.

03:42:18 10   AND THE CONFIGURATION, WHAT THE COMMANDS ARE, IS STORED IN

03:42:21 11   A CONFIGURATION FILE. IT'S NOT STORED IN RAM. SO IT'S STORED

03:42:26 12   IN WHAT'S CALLED NONVOLATILE MEMORY. SO IF THE SWITCH LOSES

03:42:32 13   POWER AND THEN COMES BACK UP, IT CAN REDUCE THAT SAME

03:42:37 14   CONFIGURATION.

03:42:37 15   SO IT ALMOST GIVES THE SWITCH ITS PARTICULAR IDENTITY.

03:42:41 16   AND WHAT'S RELEVANT ABOUT THE CONFIGURATION OF A SWITCH IS

03:42:45 17   IT'S BASICALLY A FILE OF DATA, AND YOU CAN TAKE THAT FILE FROM

03:42:48 18   ONE SWITCH AND THEN RUN THAT SAME CONFIGURATION ON ANOTHER

03:42:53 19   SWITCH. AND IT USES THE SAME COMMAND STRUCTURE, THEN YOU CAN

03:42:59 20   USE THE SAME CONFIGURATION COMMAND ON A DIFFERENT SWITCH.

03:43:03 21   NOW, A REAL TEST FOR WHETHER OR NOT YOU ARE COPYING IS IF

03:43:08 22   YOU CAN TAKE A CONFIGURATION FROM CISCO AND RUN IT ON AN ARISTA

03:43:14 23   SWITCH, AND WHETHER THAT ARISTA SWITCH UNDERSTANDS THE

03:43:17 24   CONFIGURATION AND ALL OF THE COMMANDS THAT ARE IN THAT

03:43:20 25   CONFIGURATION. AND VICE VERSA, IF YOU HAVE A CONFIGURATION ON

04:17:57 1   THE COURT: AND THE FULL VERSION IS BEING ADMITTED?

04:17:59 2   MR. NELSON: CORRECT.

04:18:00 3   THE COURT: BEING OFFERED?

04:18:01 4   MR. NELSON: YEAH. WE WILL DO IT ELECTRICALLY.

04:18:04 5   THE COURT: THANK YOU.

04:18:04 6 BY MR. NELSON:

04:18:06 7 Q.   THE IF YOU JUST LOOK AT EXHIBIT 2, THE EXCERPT YOU HAVE,

04:18:13 8 DID ONE OF THE THINGS YOU MENTIONED WAS THE COMMANDS?

04:18:16 9 A.   YES.

04:18:16 10 Q.   SO WHERE WOULD THOSE BE SHOWN IN THE USER MANUALS?

04:18:21 11 A.   THEY SHOW UP ON PAGE 3 OF THE DOCUMENT IS WHERE THEY

04:18:27 12 START. BATES NUMBER ENDING IN 7246.

04:18:32 13 Q.   SO THEN IF YOU LOOK AT, BACK TO SLIDE 44, YOU WILL SEE

04:18:40 14 THERE'S LISTED THERE SEVERAL MANUALS FOR VARIOUS VERSIONS OF

04:18:46 15 THE EOS OPERATING SYSTEM THAT IS RIGHT?

04:18:48 16 A.   YES, SIR.

04:18:48 17 Q.   NOW DID YOU CONSIDER ALL OF THOSE WHEN YOU FORMED YOUR

04:18:52 18 OPINIONS?

04:18:53 19 A.   I DID. THERE'S A USER MANUAL FOR EACH OF THE VERSIONS

04:18:57 20 IDENTIFIED. AND JUST TO START WITH THE FIRST COUPLE, 4.0.1,

04:19:04 21 4.10.0, AND THE LIST CONTINUES ON THROUGH THOSE RANGE OF

04:19:09 22 EXHIBITS AND THEY ARE ALL FOR DIFFERENT VERSIONS OF ARISTA'S

04:19:13 23 EOS. AND I LOOKED AT EACH ONE OF THEM.

04:19:15 24 Q.   OKAY?

04:19:16 25   MR. NELSON: YOUR HONOR, AT THIS POINT, AND I WILL

04:19:18   1   READ THEM INTO THE RECORD. I WOULD MOVE IN EXHIBIT NUMBER 2,

04:19:24   2   4, 5, 6, 7, 14, 8, 9, 10, 11, 13, 12, 15, 1 AND NUMBER 3.

04:19:47   3   MR. VAN NEST: NO OBJECTION, YOUR HONOR.

04:19:48   4   THE COURT: WHAT WAS THE LAST NUMBER?

04:19:50   5   MR. NELSON: 3.

04:19:50   6   THE COURT: 3?

04:19:51   7   MR. NELSON: YES.

04:19:52   8   THE COURT: AND NO OBJECTION?

04:19:53   9   MR. VAN NEST: NO OBJECTION, YOUR HONOR.

04:19:54   10   THE COURT: THANK YOU. THEY WILL ALL BE ADMITTED.

04:19:54   11   (PLAINTIFF'S EXHIBIT 1 THROUGH 15, WERE ADMITTED INTO

04:19:56   12   EVIDENCE.)

04:19:56   13   BY MR. NELSON:

04:19:57   14   Q.   SO IF WE, LET'S JUST LOOK AT THE FIRST 1, EXHIBIT

04:20:03   15   NUMBER 2, AND IT WILL PROBABLY BE EASIER IF WE PULL IT UP ON

04:20:06   16   THE SCREEN.

04:20:09   17   SO THE DATE ON THIS IS WHAT?

04:20:12   18   A.   APRIL 8TH, 2009.

04:20:15   19   Q.   AND IN TERMS OF THE VERSIONS OF OPERATING SYSTEMS THAT YOU

04:20:21   20   LOOKED AT IN THE CASE, WERE THERE ALSO LATER VERSIONS?

04:20:24   21   A.   YES, THIS IS 4.0.1. AND THERE ARE ADDITIONAL VERSIONS.

04:20:30   22   USUALLY THAT SECOND NUMBER IS INDICATIVE OF WHAT THE VERSION

04:20:36   23   IS. SO THERE'S FOUR -- MOST OF THEM -- SORRY, CAN YOU GO BACK

04:20:42   24   TO SLIDE 44.

04:20:43   25   Q.   SURE.

04:54:27 1   Q.   I THINK YOU SAID EARLIER THAT YOU PUT UP A BOARD WITH ALL

04:54:30 2   SORTS OF ABBREVIATIONS AND ACRONYMS AND YOU TELL YOUR STUDENTS

04:54:34 3   BY THE END OF THE CLASS YOU WILL KNOW ALL OF THOSE, RIGHT?

04:54:37 4   A.   YES, SIR, THAT'S WHAT I TESTIFIED TO.

04:54:39 5   Q.   AND THOSE ACRONYMS AND ABBREVIATIONS, MANY OF THEM COME

04:54:43 6   RIGHT FROM THESE INDUSTRY STANDARDS AND PROTOCOLS, RIGHT?

04:54:46 7   A.   SOME CERTAINLY DO. I DON'T KNOW IF IT'S A KIND OF CAUSE

04:54:49 8   AND EFFECT, WHETHER THOSE ACRONYMS EXIST BEFORE THE STANDARD OR

04:54:53 9   VICE VERSA.

04:54:54 10   Q.   AND THE ONES THAT DON'T, THEY'RE COMMON IN THE NETWORKING

04:54:59 11   FIELD GENERALLY, RIGHT?

04:55:00 12   A.   ESPECIALLY FOR AN UNDERGRADUATE CLASS. I'M NOT GOING TO

04:55:03 13   TEACH THEM THINGS THAT I CAN'T GET THROUGH IN TEN WEEKS.

04:55:06 14   Q.   OKAY. AND WHAT YOU ARE TEACHING THEM IS THAT THERE'S A

04:55:09 15   STANDARD BODY OF ACRONYMS AND ABBREVIATIONS THAT ARE ALSO

04:55:15 16   FAMILIAR TO NETWORK ENGINEERS, RIGHT?

04:55:17 17   A.   NO. THAT'S VERY WRONG. THERE'S NOT A STANDARD BODY OF

04:55:21 18   ACRONYMS. THERE MIGHT BE STANDARD PROTOCOLS BUT THERE ISN'T

04:55:25 19   SOME STANDARD SET OF PROTOCOLS THAT'S REQUIRED.

04:55:31 20   Q.   MAYBE YOU MISUNDERSTOOD OR MAYBE I MISSPOKE, DR. ALMEROTH.

04:55:35 21   BUT WHAT I MEANT TO SAY WAS THAT THERE ARE ACRONYMS AND

04:55:38 22   ABBREVIATIONS AND TERMS THAT ARE COMMON AND COMMONLY UNDERSTOOD

04:55:45 23   BY FOLKS IN NETWORKING, THAT'S WHAT YOU ARE TEACHING IN CLASS?

04:55:50 24   A.   THAT'S CLOSE.

04:55:53 25   Q.   AND IN FACT, MANY OF THE TERMS IN CISCO'S CLI COMMANDS

04:55:58 1   WERE TAKEN DIRECTLY FROM VARIOUS NETWORKING INDUSTRY PROTOCOLS,

04:56:03 2   RIGHT?

04:56:04 3   A.   I THINK SO, I THINK THAT'S A CHOICE THAT THE -- THAT THE

04:56:09 4   AUTHORS MADE, YES.

04:56:10 5   Q.   AS A MATTER OF FACT, THE VAST MAJORITY OF THE TERMS IN

04:56:16 6   THESE 506 COMMANDS WE ARE TALKING ABOUT COME FROM INDUSTRY

04:56:22 7   STANDARD PROTOCOLS WHERE THEY'RE USED IN A DEFINED WAY, RIGHT?

04:56:30 8   A.   NO, I DON'T THINK I WOULD AGREE WITH THAT.

04:56:32 9   Q.   NOW WE LOOKED A LITTLE BIT EARLIER IN THE WEEK AT THE IP

04:56:42 10   PROTOCOL. AND YOU WERE HERE WHEN MR. LOUGHEED TESTIFIED ABOUT

04:56:45 11   THAT?

04:56:45 12   A.   YES, SIR.

04:56:46 13   Q.   THAT'S THE INTERNET PROTOCOL, RIGHT?

04:56:50 14   A.   YES.

04:56:50 15   Q.   COMMONLY KNOWN AS IT IS IP PROTOCOL?

04:56:53 16   A.   YES.

04:56:53 17   Q.   AND YOU'VE USED THE TERM IP TO REPRESENT THAT PROTOCOL?

04:56:57 18   A.   YES.

04:56:58 19   Q.   STUDENTS USE IT?

04:56:58 20   A.   YES.

04:56:59 21   Q.   INDUSTRY NETWORK FOLKS USE IT?

04:57:01 22   A.   YES.

04:57:01 23   Q.   AND SOMETHING LIKE 148 OF THE COMMANDS THAT ARE AT ISSUE

04:57:04 24   IN THIS LAWSUIT, THEY ALSO USE IP?

04:57:07 25   A.   I BELIEVE THAT'S CORRECT.

04:57:08 1   Q.   AND WHEN THEY USE IP THEY ARE REFERRING TO THE INTERNET

04:57:13 2   PROTOCOL, RIGHT?

04:57:13 3   A.   I BELIEVE THAT THEY ARE AND THAT WAS A DESIGN CHOICE THAT

04:57:18 4   THE AUTHORS MADE.

04:57:19 5   Q.   AND THAT PROTOCOL WAS STANDARDIZED IN 1981 BEFORE CISCO

04:57:25 6   EVEN EXISTED, RIGHT?

04:57:27 7   A.   THE FIRST VERSION OF THAT, YES.

04:57:29 8   Q.   THE FIRST VERSION OF IP PROTOCOL WAS STANDARDIZED BY THE

04:57:35 9   IETF BACK IN 1981, RIGHT?

04:57:37 10   A.   RFC791.

04:57:43 11   Q.   AND THAT'S LONG BEFORE MR. LOUGHEED GOT TO CISCO?

04:57:45 12   A.   I BELIEVE THAT'S CORRECT.

04:57:46 13   Q.   LONG BEFORE THERE WAS ANY COMMAND AT CISCO IN EXISTENCE AT

04:57:50 14   ALL?

04:57:50 15   A.   THAT WOULD STAND TO REASON.

04:57:52 16   Q.   AND THERE ARE SUBSEQUENT VERSIONS OF THE INTERNET PROTOCOL

04:57:59 17   AS WELL?

04:57:59 18   A.   YES.

04:58:00 19   Q.   IPV6 IS THE VERSION 6 OF THE SAME PROTOCOL?

04:58:07 20   A.   IT IS. THE ONE THAT WAS STANDARDIZED IN 1981 IS TYPICALLY

04:58:12 21   CALLED VERSION FOUR.

04:58:13 22   Q.   THAT'S RIGHT. THE ORIGINAL ONE WE HAVE BEEN TALKING

04:58:16 23   ABOUT, THAT'S VERSION FOUR. VERSION 6 WAS STANDARDIZED A FEW

04:58:21 24   YEARS LATER, CORRECT?

04:58:22 25   A.   YES, SIR.

04:58:22   1   Q.   AND THAT'S IN TRIAL EXHIBIT 5040, IF YOU WOULDN'T MIND

04:58:31   2   TAKING A LOOK AT YOUR BINDERS THERE THAT WE'VE GOT THEM LABELED

04:58:36   3   5040.   AND THE ARE YOU GENERALLY FAMILIAR WITH THE VERSION 6

04:58:44   4   PROTOCOLS?

04:58:45   5   A.   YES, I AM.

04:58:46   6   MR. VAN NEST: YOUR HONOR, I WOULD MOVE 5040 INTO

04:58:50   7   EVIDENCE.

04:58:50   8   THE COURT: ANY OBJECTION.

04:58:51   9   MR. NELSON: I DON'T HAVE ANY OBJECTION.

04:58:52   10   THE COURT: IT WILL BE ADMITTED.

04:59:00   11   (DEFENDANT'S EXHIBIT 5040 WAS ADMITTED INTO EVIDENCE.)

04:59:00   12   BY MR. VAN NEST:

04:59:02   13   Q.   COULD WE HIGHLIGHT THE TITLE, INTERNET PROTOCOL VERSION 6.

04:59:06   14   IPV6, THAT'S THE ACRONYM OR ABBREVIATION THAT'S COMMONLY

04:59:09   15   USED TO DESCRIBE IP VERSION 6, RIGHT?

04:59:14   16   A.   IT'S ONE OF THEM.

04:59:15   17   Q.   OKAY.   AND THERE ARE A NUMBER OF COMMANDS AT ISSUE IN THIS

04:59:21   18   LAWSUIT THAT USE IPV6, RIGHT?

04:59:24   19   A.   YES.

04:59:25   20   Q.   NOW THESE PROTOCOLS ALSO HAVE DEFINED TERMS WITHIN THEM,

04:59:32   21   RIGHT?

04:59:36   22   A.   COULD YOU RESTATE -- I'M NOT SURE I UNDERSTAND WHAT YOU

04:59:39   23   ARE ASKING.

04:59:39   24   Q.   WELL, THIS EXHIBIT -- THIS IS A PROTOCOL WE ARE LOOKING AT

04:59:43   25   HERE THAT'S SEVERAL PAGES LONG?

05:08:46   1   WAS A SEPARATE DOCUMENT.

05:08:47   2   AND THEN THERE WAS A THUMB DRIVE AND IT WAS UNCLEAR TO ME

05:08:51   3   WHAT YOU WERE SUBMITTING IN EVIDENCE.

05:08:52   4   MR. PAK: YOUR HONOR, JUST TO BE CLEAR, 4803 AS AN

05:08:55   5   EXHIBIT IS THE INDEX THAT WE HAVE BEEN DISCUSSING PLUS ALL OF

05:09:00   6   THE REGISTRATION MATERIALS IN ONE.

05:09:02   7   THE COURT: HUNDREDS OF THOUSANDS OF PAGES.

05:09:04   8   MR. PAK: YES. BECAUSE IT WOULD LITERALLY BE TO THE

05:09:09   9   WALL.

05:09:09 10   THE COURT: SO THAT'S WHY I WAS CONFUSED BECAUSE IT

05:09:12 11   REFERENCED SEPARATE EXHIBIT NUMBERS.

05:09:13 12   MR. PAK: THEN SEPARATELY WE ALSO HAD IN OUR TRIAL

05:09:17 13   EXHIBIT LIST EACH OF THESE REGISTERED --

05:09:17 14   THE COURT: YOU DIDN'T INTRODUCE THEM?

05:09:17 15   MR. PAK: NO, WE DIDN'T INTRODUCE THEM BECAUSE THE

05:09:20 16   MOST EFFICIENT MECHANISM TO GET THEM IN --

05:09:20 17   THE COURT: YOU HAVE NOW COMBINED THEM AS A SINGLE

05:09:24 18   EXHIBIT INCLUDING MANY THINGS.

05:09:25 19   MR. PAK: A SINGLE EXHIBIT. AND THAT'S WHAT WE

05:09:26 20   DISCUSSED WITH ARISTA.

05:09:28 21   THE COURT: THAT'S WHAT I COULDN'T TELL BECAUSE

05:09:33 22   OBVIOUSLY I WAS NOT ABOUT TO OPEN UP A THUMB DRIVE. EVER.

05:09:39 23   SO THANK YOU. I JUST DIDN'T UNDERSTAND THAT. AND I

05:09:42 24   PRESUME THAT THE WITNESS BINDER HAD IT BECAUSE MR. LANG COULD

05:09:47 25   TESTIFY TO IT.

09:12:48 1   THE USER INTERFACE.

09:12:51 2   Q.   SO GOING FROM CAPITALS TO LOWER CASE, WHAT WAS THE CHOICE

09:12:54 3   THAT WAS MADE IN THIS INSTANCE?

09:12:56 4   A.   NO.   THAT WAS ONLY ONE OF THE CHOICES.   AS I TESTIFIED TO,

09:12:59 5   THERE WERE DIFFERENT WAYS OF REFERRING TO IPV6 USING DIFFERENT

09:13:02 6   LETTERS AND NAMES, AND THIS IS ONE THAT'S USED.

09:13:06 7   BUT WHAT I'M POINTING OUT HERE IS THAT THE CAPITALIZATION

09:13:09 8   IS, IN FACT, DIFFERENT.

09:13:10 9   Q.   I SEE.   BUT, IN FACT, WHAT WAS USED WAS THE SAME PHRASE,

09:13:15 10   IPV6, THAT'S IN THE TITLE OF THE PROTOCOL; RIGHT?

09:13:19 11   A.   I DON'T REALLY WANT TO QUIBBLE WITH YOU ABOUT WHAT A

09:13:23 12   PHRASE IS.

09:13:23 13   I THINK IT'S CLEAR THAT IN ONE INSTANCE THERE WAS

09:13:27 14   CAPITALIZATION AND THEN IN ANOTHER INSTANCE THERE WASN'T, AND

09:13:30 15   IN OTHER INSTANCES THERE'S DIFFERENT REFERENCES AND USE OF

09:13:32 16   DIFFERENT TERMS TO REFER TO IPV6.

09:13:34 17   Q.   NOW, THERE ARE ROUGHLY 45 OF THE COMMANDS AT ISSUE IN THIS

09:13:38 18   LAWSUIT THAT USE THIS IPV6 PHRASE.   RIGHT?

09:13:42 19   A.   THAT SOUNDS RIGHT.

09:13:43 20   Q.   OKAY.   NOW, THE TERM OSPF ALSO APPEARS IN THE DISPUTED

09:13:48 21   COMMANDS; RIGHT?

09:13:49 22   A.   YES.

09:13:50 23   Q.   THERE ARE ROUGHLY 35, 36 COMMANDS WITH THE PHRASE OSPF;

09:13:57 24   RIGHT?

09:13:57 25   A.   I BELIEVE THAT'S CORRECT.

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09:13:59  1    Q.   AND OSPF, THAT'S ANOTHER INDUSTRY STANDARD?

09:14:03  2    A.   IT IS.  IT STANDS FOR THE OPEN SHORTEST PATH FIRST

09:14:06  3    PROTOCOL.

09:14:06  4    Q.   OPEN SHORTEST PATH FIRST.  AND NETWORK ENGINEERS

09:14:10  5    UNDERSTAND THAT THAT'S WHAT OSPF REFERS TO; RIGHT?

09:14:13  6    A.   GENERALLY, YES.

09:14:17  7    Q.   ARE YOU GENERALLY FAMILIAR WITH THE OSPF PROTOCOL?

09:14:22  8    A.   YES, SIR.

09:14:23  9    Q.   IT'S IN YOUR BINDER THERE AT TX 5038.  WOULD YOU TAKE A

09:14:30  10   LOOK AT IT AND TELL ME WHETHER YOU RECOGNIZE IT.

09:14:46  11   A.   OKAY.  I FOUND IT.

09:14:48  12   Q.   THAT'S THE OSPF PROTOCOL?

09:14:54  13   A.   WELL, TO BE CLEAR, THERE'S THREE VERSIONS OF OSPF.  THIS

09:14:58  14   IS THE EARLIEST ONE.  THERE'S A VERSION 2 AND A VERSION 3 AS

09:15:03  15   WELL.

09:15:03  16   Q.   FAIR ENOUGH.

09:15:05  17        MR. VAN NEST:  I WOULD MOVE 503 INTO EVIDENCE,

09:15:07  18   YOUR HONOR.

09:15:07  19        THE COURT:  ANY OBJECTION?

09:15:08  20        MR. PAK:  NO OBJECTION, YOUR HONOR.

09:15:09  21        THE COURT:  IT WILL BE ADMITTED.

09:15:18  22    (DEFENDANT'S EXHIBIT 503 WAS ADMITTED INTO EVIDENCE.)

09:15:18  23   BY MR. VAN NEST:

09:15:18  24   Q.   SO IN THIS CASE, IN THIS EARLY VERSION, OSPF, THAT WAS

09:15:22  25   USED RIGHT IN THE TITLE OF THE SPECIFICATION; RIGHT?
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09:17:53 1   CHOICE THAT THE AUTHORS OF THOSE COMMANDS MADE.

09:17:55 2   Q.   LET'S TAKE A LOOK AT SLIDE 3, IF WE COULD.

09:18:04 3   OKAY. THIS IS JUST SOME OF THE OSPF COMMANDS AT ISSUE,

09:18:06 4   DR. ALMEROTH; CORRECT?

09:18:08 5   A.   THAT'S CORRECT, IT LOOKS LIKE IT.

09:18:09 6   Q.   AND WE SEE -- WE SEE AT THE BOTTOM, LET'S WORK OUR WAY UP,

09:18:15 7   ROUTER ID -- COULD WE DO THE SPLIT SCREEN, PLEASE. ROUTER ID,

09:18:20 8   THAT'S ONE OF THE PHRASES ACTUALLY DEFINED HERE IN THE PROTOCOL

09:18:25 9   RIGHT THERE ABOUT FOUR NOTES DOWN; RIGHT?

09:18:28 10   A.   THERE IS A ROUTER I DEFINED. YOU WILL NOTICE THAT IT'S

09:18:32 11   LOWER CASE AND THE HYPHEN IS ADDED. AGAIN, WHETHER TO HAVE THE

09:18:36 12   HYPHEN, WHETHER TO NAME IT THE ROUTER ID OR ANY OF THE OTHER

09:18:40 13   COMMANDS THAT USE OTHER TERMS WERE ALL CREATIVE DECISIONS.

09:18:44 14   Q.   ACTUALLY, MY QUESTION, DR. ALMEROTH WAS SIMPLY ROUTER ID

09:18:49 15   AS DEPICTED IN THE COMMAND. IT'S ALSO DEFINED IN THE PROTOCOL?

09:18:53 16   A.   WELL, I THINK I ANSWERED THAT, AND I THINK THAT THERE ARE

09:18:56 17   DIFFERENCES THERE, ESPECIALLY SIGNIFICANT TO THE WAY THAT THE

09:19:00 18   COMMANDS ARE ORGANIZED IN THE HIERARCHY.

09:19:03 19   SO EVEN THOUGH THE CONCEPT IS THE SAME, THE WORD CHOICE

09:19:06 20   AND THE LETTER CHOICE, THE FORMATTING, THOSE ARE ALL THINGS

09:19:10 21   THAT MAKE A DIFFERENCE TO A PARSER, FOR EXAMPLE. MAKE A

09:19:14 22   DIFFERENCE TO AN ENGINEER, AND, THEREFORE, ARE PART OF THE

09:19:17 23   CREATIVE CHOICE.

09:19:17 24   Q.   BUT THERE'S NO DOUBT THAT THE ROUTER ID CONCEPT THAT'S IN

09:19:21 25   THIS COMMAND COMES FROM THE PROTOCOL; RIGHT?

09:22:27 1   Q.   BUT, IN FACT, THE TERM IS USED BOTH IN THE PROTOCOL AND

09:22:30 2   IT'S USED IN THE COMMAND; CORRECT?

09:22:32 3   A.   YES, I THINK THAT THE FACT THAT YOU HAVE THE SAME LETTERS

09:22:35 4   OF THE SAME WORD, THOUGH THE CAPITALIZATION IS DIFFERENT, AS IT

09:22:44 5   IS FOR THE HELLO INTERVAL DEMONSTRATES THERE ARE DIFFERENCES

09:22:47 6   BETWEEN THE WORDS, AND JUST BECAUSE THE WORD APPEARS IN THE

09:22:51 7   STANDARD DOESN'T MEAN THERE'S A CHOICE MADE BY THE PERSON.

09:22:54 8   Q.   OKAY. BUT ONE CHOICE THAT WAS MADE WAS TO USE THE TERM

09:22:57 9   THAT'S IN THE STANDARD; RIGHT?

09:22:58 10   A.   THAT COULD HAVE BEEN A CHOICE. AND JUST BECAUSE A WORD

09:23:04 11   APPEARS IN THE STANDARD DOESN'T MEAN THAT THE INVERSE IS TRUE.

09:23:09 12   IF THE WORD WAS CHOSEN BECAUSE IT IS IN THE STANDARD.

09:23:12 13   Q.   I SEE. ARE YOU TELLING US THIS IS JUST A COINCIDENCE?

09:23:16 14   A.   NO, I'M NOT SAYING IT'S A COINCIDENCE BUT JUST BECAUSE THE

09:23:19 15   WORD IS IN THE STANDARD DOESN'T MEAN THAT'S WHY IT WAS CHOSEN

09:23:21 16   TO GO INTO THE COMMAND.

09:23:23 17   Q.   NOW, HELLO INTERVAL IS THE LAST ONE ON THIS SLIDE. HELLO

09:23:27 18   INTERVAL IS ALSO A DEFINED TERM IN THIS PROTOCOL; CORRECT?

09:23:31 19   A.   YES. AND YOU WILL NOTE THAT THERE ARE SUBTLE BUT

09:23:36 20   IMPORTANT DIFFERENCES BETWEEN WHAT THE COMMAND IS AND HOW IT'S

09:23:39 21   DESCRIBED IN THIS RFC.

09:23:41 22   Q.   NOW, THE TERM SNMP, THAT ALSO APPEARS IN MANY DISPUTED

09:23:45 23   COMMANDS; RIGHT?

09:23:47 24   A.   I'M NOT SURE OF THE COUNT.

09:23:49 25   Q.   IT'S APPROXIMATELY 27.

09:23:51 1   A.   OKAY.

09:23:52 2   Q.   DOES THAT SEEM ABOUT RIGHT?

09:23:53 3   A.   IT IS. YOU HAVE THE NOTES. I DON'T HAVE THEM ALL

09:23:57 4   MEMORIZED.

09:23:57 5   Q.   AND SNMP, THAT'S ANOTHER INDUSTRY STANDARD PROTOCOL,

09:24:01 6   RIGHT?

09:24:01 7   A.   IT IS. THE SIMPLE NETWORK MANAGEMENT PROTOCOL.

09:24:03 8   Q.   AND NETWORKING ENGINEERS ARE ACCUSTOMED AND FAMILIAR WITH

09:24:07 9   THAT PHRASE?

09:24:08 10   A.   WITH THAT PHRASE, AGAIN, THERE ARE MULTIPLE VERSIONS OF

09:24:11 11   SNMP, AS THERE ARE WITH OSPF AND IP.

09:24:16 12   Q.   BUT SNMP IS USED TO REFER TO THIS PROTOCOL, SIMPLE NETWORK

09:24:21 13   MANAGEMENT PROTOCOL?

09:24:22 14   A.   GENERALLY, THAT'S TRUE. TECHNICALLY -- USUALLY THE WAY

09:24:26 15   THAT IT IS, IS, FOR EXAMPLE, IF YOU ARE REFERRING TO IP, IT

09:24:29 16   INCLUDES BOTH IP V4 AND IP V6. IF YOU WANT TO DISTINGUISH

09:24:36 17   BETWEEN THE VERSIONS, THEN YOU WILL ADD SOMETHING LIKE V6 OR

09:24:39 18   VERSION 6.

09:24:41 19   Q.   SURE.

09:24:41 20   A.   THE SAME THING APPLIES TO SNMP.

09:24:43 21   Q.   AND WOULD YOU OPEN YOUR BINDER -- ARE YOU GENERALLY

09:24:45 22   FAMILIAR WITH THIS PROTOCOL?

09:24:46 23   A.   YES.

09:24:47 24   Q.   WOULD YOU OPEN YOUR BINDER TO TX 5131, PLEASE.

09:24:55 25   IS THAT THE PROTOCOL, OR A VERSION OF IT?

09:24:57 1   A.   THIS IS. IT'S BOTH WITH OSPF AND SNMP, THESE WERE LATER

09:25:07 2   OBSOLETED BY UPDATED STANDARDS.

09:25:09 3   Q.   RIGHT. BUT THIS IS THE EARLIEST ONE BACK IN 1988; RIGHT?

09:25:12 4   A.   IT'S A VERY RUDIMENTARY VERSION BUT, YES, IT'S THE SIMPLE

09:25:21 5   NETWORK MANAGEMENT PROTOCOL AS ORIGINALLY DEFINED.

09:25:24 6   MR. VAN NEST: I MOVE 5131 INTO EVIDENCE YOUR HONOR.

09:25:26 7   THE COURT: ANY OBJECTION?

09:25:27 8   MR. NELSON: NO OBJECTION YOUR HONOR.

09:25:28 9   THE COURT: OKAY. IT WILL BE ADMITTED.

09:25:30 10   (DEFENDANT'S EXHIBIT 5131 WAS ADMITTED INTO EVIDENCE.)

09:25:30 11   MR. VAN NEST: LET'S DISPLAY FOR THE JURY OURS

09:25:34 12   BRIEFLY. SNMP, SIMPLE NETWORK MANAGEMENT PROTOCOL. THAT'S THE

09:25:37 13   TITLE.

09:25:38 14   Q.   AND YOU WILL SEE ON LINE 3 THERE THE SNMP ARCHITECTURE,

09:25:42 15   THOSE INITIALS ARE COMMONLY USED TO REFER TO THIS PROTOCOL;

09:25:45 16   RIGHT?

09:25:45 17   A.   THAT'S TRUE.

09:25:46 18   Q.   AND WHOEVER CREATED THE COMMAND AT CISCO USED THOSE SAME

09:25:53 19   INITIALS TO REFER TO THE SAME PROTOCOL; RIGHT?

09:25:55 20   A.   THEY DID MAKE THAT CHOICE.

09:25:57 21   Q.   AND ONE REASON TO MAKE THAT CHOICE IS THAT THAT ACRONYM,

09:26:02 22   THAT PHRASE, THAT WAS FAMILIAR TO AND KNOWN BY NETWORK

09:26:05 23   ENGINEERS; RIGHT?

09:26:06 24   A.   THAT'S ONE OF THE CRITERION THAT COULD HAVE GONE INTO THE

09:26:09 25   SELECTION OF THAT ACRONYM FOR THE COMMAND.

09:26:11   1   Q.   NOW, WE HEARD EARLIER ABOUT BGP, THAT'S ANOTHER PROTOCOL;

09:26:16   2   RIGHT?

09:26:16   3   A.   YES, SIR.

09:26:16   4   Q.   BORDER GATEWAY PROTOCOL?

09:26:18   5   A.   YES.

09:26:18   6   Q.   WE HEARD SOME DISCUSSION ABOUT THAT FROM MR. LOUGHEED?

09:26:21   7   A.   YES.

09:26:22   8   Q.   RIGHT? AND THE -- BGP IS ANOTHER TERM THAT'S USED IN MANY

09:26:26   9   OF THE COMMANDS AT ISSUE IN THE CASE; RIGHT?

09:26:28 10   A.   AGAIN, I DON'T HAVE THE COUNT. I'M SURE YOU HAVE IT RIGHT

09:26:32 11   IN FRONT OF YOU.

09:26:33 12   Q.   I THINK THE COUNT IS ABOUT 24. DOES THAT SOUND ABOUT

09:26:36 13   RIGHT?

09:26:36 14   A.   THAT SOUNDS ABOUT RIGHT.

09:26:37 15   Q.   OKAY. THE TERM SPANNING-TREE APPEARS IN A NUMBER OF

09:26:42 16   DISPUTED COMMANDS; CORRECT?

09:26:43 17   A.   IT DOES.

09:26:44 18   Q.   I HAVE AS COUNT THERE 23 OF THE COMMANDS AT ISSUE ARE

09:26:49 19   SPANNING-TREE?

09:26:49 20   A.   OKAY.

09:26:50 21   Q.   NOW SPANNING-TREE, THAT'S ANOTHER INDUSTRY STANDARD

09:26:55 22   PROTOCOL; RIGHT?

09:26:55 23   A.   NO. SPANNING-TREE BY ITSELF, USUALLY THERE'S AN ACRONYM,

09:27:03 24   STP, FOR THE SPANNING-TREE PROTOCOL. YOU CAN REFER TO IT AS

09:27:09 25   STP TO REFERENCE THE PROTOCOL SPECIFICALLY.

09:30:11 1   Q.   FAIR ENOUGH.

09:30:12 2   NOW, THE TERM IGMP --

09:30:15 3   A.   OH, I'M SORRY. ONE ADDITIONAL NOTE ABOUT THAT. THAT WAS

09:30:18 4   NOT -- I DON'T BELIEVE THAT WAS AN IMPLEMENTATION OF THE

09:30:22 5   SPANNING-TREE PROTOCOL.

09:30:22 6   Q.   OKAY. FAIR ENOUGH.

09:30:24 7   THE TERM IGMP, THAT ALSO APPEARS IN MANY DISPUTED

09:30:30 8   COMMANDS?

09:30:30 9   A.   AGAIN, I DON'T HAVE THE COUNT.

09:30:32 10   Q.   I HAVE THE COUNT AT 21. DOES THAT SEEM RIGHT?

09:30:34 11   A.   OKAY. I THINK 21 OUT OF 50 VERSION 6 IS PROBABLY NOT

09:30:39 12   MANY.

09:30:39 13   Q.   WELL, IT IS WHAT IT IS.

09:30:41 14   A.   I AGREE, YOUR CHARACTERIZATION WAS MANY --

09:30:44 15   Q.   FAIR ENOUGH. FAIR ENOUGH. 21.

09:30:47 16   AND THAT'S ANOTHER INDUSTRY STANDARD PROTOCOL, IGMP;

09:30:51 17   RIGHT.

09:30:51 18   A.   YES. THERE'S, AGAIN, VERSION 1, VERSION 2, AND VERSION 3.

09:30:56 19   Q.   AND IT MEANS INTERNET GROUP MANAGEMENT PROTOCOL; RIGHT?

09:30:59 20   A.   YES, SIR.

09:31:00 21   Q.   NETWORK ENGINEERS WOULD UNDERSTAND THAT?

09:31:02 22   A.   GENERALLY, YES.

09:31:03 23   Q.   AND IT'S A FAMILIAR TERM TO THEM?

09:31:05 24   A.   YES.

09:31:06 25   Q.   THERE ARE VARIOUS VERSIONS OF IT?

09:31:08 1   A.   YES.

09:31:08 2   Q.   AND LET'S TAKE A LOOK AT VERSION 2 IN YOUR NOTEBOOK, 6877,

09:31:20 3   TX 6877. AND TELL ME WHETHER YOU RECOGNIZE THAT.

09:31:25 4   A.   SORRY, I DIDN'T REALIZE IT WAS IN VOLUME II.

09:31:47 5   Q.   SORRY.

09:31:55 6   DO YOU RECOGNIZE 6877 AS VERSION 2?

09:31:58 7   A.   YES.

09:31:59 8   MR. VAN NEST: I WOULD OFFER 6877 IN EVIDENCE,

09:32:01 9   YOUR HONOR.

09:32:02 10   MR. NELSON: NO OBJECTION, YOUR HONOR.

09:32:03 11   THE COURT: IT WILL BE ADMITTED.

09:32:05 12   (DEFENDANT'S EXHIBIT 6877 WAS ADMITTED INTO EVIDENCE.)

09:32:05 13   MR. VAN NEST: COULD WE DISPLAY IT, PLEASE, MR. DAHM.

09:32:10 14   Q.   OKAY. THIS IS THE INTERNET GROUP MANAGEMENT PROTOCOL.

09:32:13 15   AND YOU SEE DOWN THERE IN THE ABSTRACT, IT'S REFERRED TO JUST

09:32:16 16   THE WAY YOU DID AS IGMP V2?

09:32:20 17   A.   YES.

09:32:22 18   Q.   NOW, THIS DOCUMENT ALSO HAS SOME DEFINITIONS IN IT, DOES

09:32:26 19   IT NOT?

09:32:36 20   MR. VAN NEST: LET'S GO TO -- CAN WE PULL UP THE

09:32:38 21   DEFINITIONS, MR. DAHM.

09:32:41 22   Q.   THEY ARE ON A COUPLE OF PAGES. LET'S START WITH THIS ONE.

09:32:47 23   QUERY INTERVAL, I'VE GOT THEM ON THE SCREEN BECAUSE IT MAY BE A

09:32:50 24   LITTLE BIT EASIER.

09:32:51 25   A.   I WAS JUST CONFUSED BECAUSE SECTION 1 IS ENTITLED

09:32:54 1   DEFINITIONS. THIS IS NOT A SECTION ENTITLED DEFINITIONS.

09:32:58 2   Q.   WELL, LET'S GO BACK TO PAGE 48, OR WHICHEVER PAGE WE ARE

09:33:08 3   ON HERE, I HAVE IT ON THE SCREEN. QUERY INTERVAL IS A CONCEPT

09:33:11 4   DISCUSSED IN THE PROTOCOL?

09:33:13 5   A.   IT IS, IT'S ONE OF THE TIMERS.

09:33:16 6   Q.   AND THERE ARE A NUMBER OF OTHER TERMS DEFINED HERE AS

09:33:19 7   WELL; RIGHT?

09:33:20 8   A.   WELL, AGAIN, I DON'T THINK THIS IS A DEFINITION OF TERMS.

09:33:23 9   I THINK IT'S, AS SECTION 8 DESCRIBES, IT'S A LIST OF TIMERS AND

09:33:28 10   DEFAULT VALUES.

09:33:29 11   Q.   OKAY. BUT THEY'RE CERTAINLY DISCUSSED. AT THE BOTTOM OF

09:33:35 12   THE PAGE, STARTUP-QUERY-INTERVAL, IT'S A DISCUSSED TERM?

09:33:39 13   A.   IT'S -- IT IS.

09:33:41 14   Q.   STARTUP-QUERY-COUNT, THAT'S A DISCUSSED TERM?

09:33:46 15   A.   IT IS LISTED THERE.

09:33:48 16   Q.   AND ON THE NEXT PAGE WE'VE GOT SOME MORE THAT ARE

09:33:51 17   DISCUSSED IN THIS PROTOCOL. LAST MEMBER QUERY INTERVAL, LAST

09:33:55 18   MEMBER QUERY COUNT. AND SEVERAL OTHERS AS WELL?

09:33:59 19   A.   I SEE THOSE.

09:34:00 20   Q.   AND THESE ARE ALL PHRASES THAT ARE INCLUDED IN SOME OF THE

09:34:06 21   COMMANDS AT ISSUE IN THIS LAWSUIT; RIGHT?

09:34:11 22   A.   I DON'T BELIEVE THEY ARE.

09:34:16 23   MR. VAN NEST: COULD WE PUT UP SLIDE 4, PLEASE.

09:34:18 24   Q.   I WILL REPRESENT TO YOU, DR. ALMEROTH, THAT THESE LONG

09:34:26 25   FOUR- OR FIVE-WORD PHRASES ARE ALL AMONG THE 506 THAT YOU

09:34:32 1   IDENTIFIED YESTERDAY. DO YOU THINK THAT'S RIGHT?

09:34:34 2   A.   I DO. AND YOU WILL NOTE THE DIFFERENCE BETWEEN THE WAY

09:34:37 3   THAT THEY ARE REPRESENTED IN THE IGMP V2 STANDARD AND THE WAY

09:34:43 4   THAT THEY ARE DESCRIBED HERE.

09:34:44 5   Q.   WELL, LET'S START AT THE TOP THERE. NOW, AGAIN, THE IGMP

09:34:49 6   STANDARD, IT RUNS IN CONNECTION WITH THE IP STANDARD; RIGHT?

09:34:55 7   A.   GENERALLY, IT DOES.

09:34:56 8   Q.   OKAY. SO IP, WE'VE TALKED ABOUT THAT, IGMP, QUERY

09:35:02 9   INTERVAL, THAT'S ONE OF THE TERMS WE JUST LOOKED AT THAT'S

09:35:05 10   DISCUSSED IN THE PROTOCOL ITSELF; RIGHT?

09:35:07 11   A.   NO, IT'S NOT. IT'S DIFFERENT. IT USES A DIFFERENT

09:35:12 12   SYNTAX, IT USES A HYPHEN, IT USES LOWER CASE, JUST LIKE JUST

09:35:17 13   LIKE IN SECTION 8.2 THAT LISTS QUERY INTERVAL, THE PERSON WHO

09:35:21 14   DESIGNED THIS COMMAND HAD A CHOICE WHETHER TO INCLUDE THE

09:35:24 15   HYPHEN, WHETHER TO INCLUDE THE CAPITALIZATION. YOU CAN USE

09:35:27 16   OTHER WORDS OTHER THAN QUERY INTERVAL.

09:35:30 17   Q.   MY QUESTION WAS A LITTLE MORE SIMPLE, DR. ALMEROTH.

09:35:34 18   DOESN'T THE TERM QUERY INTERVAL, ISN'T THAT DISCUSSED IN THE

09:35:37 19   PROTOCOL AS WE JUST SAW?

09:35:39 20   A.   THE TERM, THERE'S A SECTION -- WELL, YOUR TERM IS

09:35:42 21   AMBIGUOUS, WHETHER YOU ARE TALKING ABOUT THE COMMAND OR WHETHER

09:35:45 22   YOU ARE TALKING ABOUT WHAT'S DESCRIBED IN THE MANUAL. THOSE

09:35:49 23   TWO ARE DIFFERENT THINGS.

09:35:51 24   Q.   I DON'T WANT TO TALK ABOUT HYPHENS FOR NOW, WE WILL GET TO

09:35:53 25   THAT.

09:35:55 1   A.   OKAY.

09:35:55 2   Q.   I WANT TO TALK ABOUT WORDS.

09:35:57 3   THE WORDS QUERY INTERVAL, THEY ARE DISCUSSED IN THE

09:36:00 4   STANDARD ITSELF; RIGHT?

09:36:02 5   A.   THOSE WORDS ARE DISCUSSED IN THE STANDARD.

09:36:04 6   Q.   WE JUST SAW THAT.

09:36:06 7   AND SO IS LAST MEMBER QUERY COUNT; RIGHT?

09:36:13 8   A.   THERE IS A DISCUSSION OF THAT TIMER, DIFFERENT WORDS, BUT

09:36:18 9   OKAY.

09:36:18 10   Q.   AND LAST MEMBER QUERY INTERVAL, IT'S DISCUSSED IN THE

09:36:21 11   PROTOCOL?

09:36:21 12   A.   IT'S THE SAME THING.

09:36:24 13   Q.   AND STARTUP-QUERY-COUNT, THAT'S DISCUSSED IN THE PROTOCOL?

09:36:29 14   A.   IT'S VERY SIMILAR, BUT NOT THE SAME.

09:36:32 15   Q.   AND STARTUP-QUERY-INTERVAL, THAT'S DISCUSSED IN THE

09:36:35 16   PROTOCOL?

09:36:36 17   A.   VERY SIMILAR BUT NOT THE SAME.

09:36:37 18   Q.   AND INTERFACE, GROUP AND GROUPS, THOSE ARE ALL DISCUSSED

09:36:40 19   IN THE PROTOCOL TOO?

09:36:41 20   A.   AGAIN, THOSE GENERAL CONCEPTS, THOSE PARTICULAR WORDS

09:36:45 21   MIGHT APPEAR. I DON'T KNOW IF THOSE PARTICULAR WORDS IN THAT

09:36:49 22   ORDER APPEAR. BUT, AGAIN, REGARDLESS OF WHETHER THEY APPEAR IN

09:36:53 23   THE STANDARD DOESN'T MEAN THAT THE PERSON WHO WROTE THESE

09:36:56 24   COMMANDS DIDN'T HAVE A CHOICE.

09:36:58 25   Q.   NOW, COULD WE PUT UP THE SIDE BY SIDE PLEASE, MR. DAHM.

09:37:08 1   SO IT'S CLEAR FROM THIS THAT WHOEVER DESIGNED THESE

09:37:12 2 COMMANDS WAS MAKING REFERENCE, AT MINIMUM, TO CONCEPTS THAT

09:37:20 3 WERE DISCUSSED IN THE PROTOCOL ITSELF; RIGHT?

09:37:22 4 A.   I THINK THAT'S GENERALLY TRUE. I THINK WHOEVER WAS

09:37:25 5 IMPLEMENTING THESE COMMANDS FOR CISCO WAS AWARE OF WHAT WAS IN

09:37:31 6 THE STANDARD AND HOW THE PROTOCOL OPERATES.

09:37:33 7 Q.   AND, THEREFORE, CHOSE TERMS FROM THE STANDARD THAT WOULD

09:37:38 8 BE FAMILIAR TO NETWORK ENGINEERS; RIGHT?

09:37:40 9 A.   I THINK THAT COULD HAVE BEEN ONE OF THE DESIGN

09:37:42 10 CONSIDERATIONS, SINCE THERE ARE DIFFERENCES HERE, CLEARLY THERE

09:37:46 11 WERE OTHER FACTORS AT PLAY, AND HOW THESE WERE ORGANIZED AND

09:37:53 12 WHAT HIERARCHY WAS SELECTED ALL COME INTO PLAY.

09:37:55 13 Q.   NOW, THERE WERE MANY, MANY OTHER PROTOCOLS THAT ARE

09:37:57 14 RELEVANT TO THE COMMANDS AT ISSUE IN THIS CASE; RIGHT?

09:38:00 15 A.   YOU SAID MANY TWO TIMES. I WOULD ACTUALLY AGREE, THERE

09:38:05 16 ARE A VERY LARGE NUMBER OF PROTOCOLS.

09:38:07 17 Q.   OKAY. THE PIM PROTOCOL APPEARS IN ROUGHLY 20 OF THE

09:38:11 18 COMMANDS?

09:38:12 19 A.   PROTOCOL INDEPENDENT MULTITASK, YES.

09:38:15 20 Q.   THAT'S AN INDUSTRY STANDARD PROTOCOL AS WELL?

09:38:17 21 A.   IT IS.

09:38:18 22 Q.   YOU ARE FAMILIAR WITH THAT? YOU ARE A PARTICIPANT IN IT?

09:38:22 23 A.   YES.

09:38:23 24 Q.   OKAY. WOULD YOU LOOK AT YOUR NOTEBOOK AT TX 6870, PLEASE,

09:38:36 25 AND TELL ME WHETHER YOU RECOGNIZE THAT DOCUMENT.

09:38:39 1   A.   I DO.

09:38:39 2   Q.   IS THAT ONE VERSION OF THE PIM PROTOCOL SPECIFICATION?

09:38:45 3   A.   IT IS.

09:38:46 4   MR. VAN NEST: I WOULD MOVE 6870 IN EVIDENCE,

09:38:50 5   YOUR HONOR?

09:38:51 6   THE COURT: ANY OBJECTION?

09:38:52 7   MR. NELSON: NO OBJECTION.

09:38:53 8   THE COURT: IT WILL BE ADMITTED.

09:38:56 9   (DEFENDANT'S EXHIBIT 6870 WAS ADMITTED INTO EVIDENCE.)

09:38:56 10   BY MR. VAN NEST:

09:38:56 11   Q.   THAT EXPRESSION, PIM, IS WELL KNOWN TO NETWORK ENGINEERS?

09:39:04 12   A.   GENERALLY, IT IS. AND AS THIS IDENTIFIES, THERE'S TWO

09:39:08 13   DIFFERENT VARIANTS OF PIM, THERE'S A DENSE MODE AND THEN THIS

09:39:12 14   ONE DISCUSSES THE SPARSE MODE VERSION.

09:39:15 15   Q.   AND, IN FACT, IN YOUR REPORT YOU REFER TO THIS PROTOCOL AS

09:39:20 16   PIM YOURSELF?

09:39:20 17   A.   I BELIEVE THAT'S CORRECT. AND GENERALLY THAT MEANS YOU

09:39:23 18   ARE REFERRING TO BOTH TYPES OF PIM.

09:39:26 19   Q.   NOW, MSDP, THAT APPEARS IN 19 OF THE COMMANDS?

09:39:30 20   A.   THE MULTITASK SOURCE DISCOVERY PROTOCOL.

09:39:34 21   Q.   THAT'S ANOTHER IT EF, INDUSTRY STANDARD PROTOCOL?

09:39:40 22   A.   YES, THAT IS.

09:39:41 23   Q.   THAT'S AT 6910 IN YOUR BINDER, IF YOU WOULD TAKE A LOOK AT

09:39:45 24   THAT, PLEASE.

09:39:54 25   A.   YES.

09:39:54 1   Q.   ALL RIGHT.

09:39:55 2   MR. VAN NEST: I WOULD MOVE 6910 IN EVIDENCE,

09:39:57 3   YOUR HONOR.

09:39:58 4   MR. NELSON: I'M ALMOST THERE, YOUR HONOR.

09:40:00 5   MR. VAN NEST: OH, EXCUSE ME. I'M SORRY.

09:40:02 6   MR. NELSON: NO, THAT'S OKAY.

09:40:03 7   THAT'S FINE, YOUR HONOR.

09:40:04 8   THE COURT: IT WILL BE ADMITTED.

09:40:07 9   (DEFENDANT'S EXHIBIT 6910 WAS ADMITTED INTO EVIDENCE.)

09:40:07 10   BY MR. VAN NEST:

09:40:08 11   Q.   IF WE COULD DISPLAY THIS ONE. ON THIS PROTOCOL, THE

09:40:11 12   INITIALS WE ARE TALKING ABOUT HERE, MSDP, THEY APPEAR RIGHT IN

09:40:16 13   THE TITLE OF THE PROTOCOL; CORRECT?

09:40:17 14   A.   THEY DO.

09:40:19 15   Q.   AND THAT WAS THE ACRONYM THAT ENGINEERS AT CISCO CHOSE TO

09:40:21 16   USE IN THE COMMANDS AS WELL?

09:40:22 17   A.   THAT WAS WHAT THEY CHOSE, THAT'S CORRECT.

09:40:25 18   Q.   AND PROBABLY THERE ARE SOME TERMS IN THIS PROTOCOL THAT

09:40:28 19   DISCUSS MSDP THAT WERE ALSO CHOSEN TO BE INCLUDED; RIGHT?

09:40:34 20   A.   VERY LIKELY. I MEAN, THIS DOCUMENT IS COMPOSED OF

09:40:37 21   HUNDREDS, IF NOT THOUSANDS, OF WORDS, AND THE IDEA THAT THERE

09:40:42 22   ARE SOME ENGLISH WORDS THAT MIGHT ALSO APPEAR IN WHAT THE

09:40:48 23   INVENTOR OF THE COMMAND LINE INTERFACE COMMAND CHOSE, CERTAINLY

09:40:53 24   THAT MIGHT BE THE CASE.

09:40:55 25   Q.   AND LIKELY, THE CHOICE WAS MADE BECAUSE THE TERMS ARE

09:40:59 1   FAMILIAR TO PEOPLE WHO ARE USING THE MSDP STANDARD, RIGHT,

09:41:04 2   DR. ALMEROTH?

09:41:05 3   A.   THAT MIGHT BE ONE OF THE CONSIDERATIONS. BUT, AGAIN,

09:41:08 4   THERE ARE OTHER CONSIDERATIONS. I TALKED ABOUT THE

09:41:12 5   PARSER-POLICE MANIFESTO. THERE WERE A VARIETY OF

09:41:17 6   CONSIDERATIONS THAT WENT INTO THE CREATIVE PROCESS THAT THE

09:41:19 7   ENGINEERS AT CISCO USED.

09:41:20 8   Q.   ISIS, IS-IS, IS THAT AN INDUSTRY STANDARD PROTOCOL?

09:41:31 9   A.   YES.

09:41:32 10   Q.   AND THERE ARE ROUGHLY 1EN COMMANDS AT ISSUE THAT USE THAT

09:41:37 11   PHRASE; CORRECT?

09:41:38 12   A.   YES.

09:41:38 13   Q.   THAT'S TX 6824. WOULD YOU TAKE A MOMENT TO LOOK AT THAT

09:41:43 14   ONE. DO YOU RECOGNIZE IT, DR. ALMEROTH?

09:42:01 15   A.   I DO.

09:42:03 16   MR. VAN NEST: I MOVE 6824 INTO EVIDENCE, YOUR HONOR.

09:42:06 17   MR. NELSON: NO OBJECTION, YOUR HONOR.

09:42:08 18   THE COURT: DID WILL BE ADMITTED.

09:42:10 19   (DEFENDANT'S EXHIBIT 6824 WAS ADMITTED INTO EVIDENCE.)

09:42:10 20   BY MR. VAN NEST:

09:42:10 21   Q.   AND AGAIN HERE, USE OF IS-IS FOR ROUTING IN TCP/IP AND

09:42:22 22   DUAL ENVIRONMENTS, THAT APPEARS RIGHT IN THE TITLE OF THE

09:42:25 23   PROTOCOL. CORRECT?

09:42:26 24   A.   IT DOES. IT'S A LITTLE BIT UNFORTUNATE. BUT USUALLY THE

09:42:29 25   WAY WE PRONOUNCE IT IS ISIS.

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09:17:19   1              THE COURT:  ALL RIGHT.  THE LAST THING THAT I WOULD

09:17:21   2    LIKE TO ASK, AND I DON'T KNOW WHETHER ALL THE EXHIBITS ARE IN,

09:17:24   3    I WOULD ACTUALLY LIKE FOR ME, AND MAYBE THE JURY NEEDS IT AS

09:17:27   4    WELL, BUT I DON'T REQUIRE IT, I WOULD LIKE A LIST OF EXHIBITS

09:17:30   5    THAT ARE ASSOCIATED WITH EACH OF THE WORKS.  BECAUSE THE JURY

09:17:36   6    IS GOING TO HAVE TO LOOK AT THE WORKS AS A WHOLE, I DON'T EVEN

09:17:39   7    KNOW WHERE THEY ARE IN THE EVIDENCE.

09:17:41   8         IT OCCURS TO ME, AND I ASK YOU THIS, I'M NOT REQUIRING IT,

09:17:44   9    DOES IT MAKE SENSE TO GIVE THE JURY A SHEET THAT DIRECTS THEM

09:17:49   10   TO WHERE THOSE EXHIBITS ARE, BECAUSE THEY ARE REQUIRED TO MAKE

09:17:52   11   THE COMPARISON?  PLEASE CONSIDER THAT.

09:17:54   12        IF YOU BOTH AGREE, THAT'S GREAT, IF YOU DISAGREE, AGAIN, I

09:17:58   13   DON'T PICK EXHIBITS OUT TO HIGHLIGHT FOR THE JURY, IT'S NOT MY

09:18:01   14   JOB.

09:18:02   15             MR. NELSON:  THAT'S FINE, YOUR HONOR.  WE CAN WORK

09:18:04   16   THAT OUT WITH THEM.

09:18:06   17             THE COURT:  GOOD.  I WOULD LIKE TO KNOW WHERE THEY

09:18:08   18   ARE.

09:18:08   19             MR. NELSON:  SURE, UNDERSTOOD.

09:18:09   20             THE COURT:  BECAUSE, ULTIMATELY, THAT'S GOING TO BE

09:18:11   21   IMPORTANT FOR ME, AND I DON'T THINK I'VE EVER SEEN THAT EXHIBIT

09:18:14   22   THAT IS THE WORK AS A WHOLE.  I MEAN, DON'T EVEN KNOW WHAT THAT

09:18:19   23   IS.  BECAUSE SOME OF THESE WERE SO BIG I COULDN'T MANAGE THEM

09:18:23   24   PHYSICALLY.

09:18:24   25             MR. NELSON:  RIGHT.  UNDERSTOOD, YOUR HONOR.  WE WILL
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09:18:25	1	SEE IF WE CAN WORK THAT OUT.
09:18:27	2	THE COURT: OKAY. AND I THINK ALL OF JURORS ARE
09:18:31	3	HERE. SO I WILL ASSESS 15 MINUTES EQUALLY BETWEEN THE SIDES
09:18:34	4	FOR THE EXTRA TIME TAKEN THIS MORNING.
09:18:38	5	OKAY. AND I THINK MY VOICE WILL LIKE RESTING A LITTLE AND
09:18:45	6	I WILL BE READY TO LISTEN.
09:19:37	7	(JURY IN AT 9:19 A.M.)
09:19:39	8	THE COURT: ALL RIGHT. PLEASE BE SEATED, EVERYONE.
09:20:13	9	GOOD MORNING, LADIES AND GENTLEMEN, WE ARE BACK ON THE
09:20:15	10	RECORD IN CISCO VERSUS ARISTA. ALL OF OUR JURORS ARE HERE.
09:20:21	11	YOU CAN TELL MY VOICE IS DISAPPEARING, SO YOU WON'T BE
09:20:23	12	HEARING MUCH FROM ME TODAY.
09:20:26	13	DR. CHEVALIER IS HERE. GOOD MORNING. I'M GOING TO HAVE
09:20:28	14	YOU SWORN FOR A NEW COURT DAY AND MR. PAK IS GOING TO CONTINUE
09:20:32	15	WITH DIRECT EXAM.
09:20:33	16	MR. PAK: THAT'S CORRECT, YOUR HONOR.
09:20:35	17	(**PLAINTIFF'S WITNESS, DR. JUDITH CHEVALIER, WAS SWORN.)**
09:20:36	18	THE WITNESS: YES.
09:20:49	19	THE COURT: GO AHEAD.
09:20:51	20	**DIRECT EXAMINATION**
09:20:51	21	BY MR. PAK:
09:20:52	22	Q. WELCOME BACK, DR. CHEVALIER. I THINK WE WERE ALMOST DONE
09:20:56	23	WITH YOUR DIRECT PRESENTATION, SO I WANT TO GO BACK TO SLIDE
09:21:00	24	29.
09:21:02	25	AND I THOUGHT IT WOULD ACTUALLY BE HELPFUL JUST TO START

11:41:21 1   A.   ABSOLUTELY.

11:41:22 2   Q.   NOW DID YOU SUE ANY OF THESE OTHER COMPANIES SIMPLY

11:41:25 3 BECAUSE CISCO EMPLOYEES LEFT CISCO TO GO TO ANOTHER COMPANY TO

11:41:28 4 COMPETE AGAINST YOU, WHERE YOU LOST SALES?

11:41:31 5   A.   NO, WE DID NOT.

11:41:32 6   Q.   AS FAR AS YOU KNOW AT THESE OTHER COMPANIES, DID THE

11:41:38 7 FORMER CISCO EMPLOYEES WHO ARE NOW AT THOSE COMPANIES COMPETING

11:41:42 8 AGAINST CISCO, DID THEY TAKE INTEREST CISCO INTELLECTUAL

11:41:45 9 PROPERTY WITH THEM?

11:41:45 10   A.   NOT TO THE BEST OF MY KNOWLEDGE, WE HAVE NO INDICATION

11:41:49 11 THAT THAT THEY DID.

11:41:51 12   MR. DESMARAIS: YOUR HONOR, I WOULD LIKE TO MARK THIS

11:41:53 13 AS A DEMONSTRATIVE. WHAT'S THE NEXT NUMBER? 4826.

11:41:58 14   THE COURT: OF COURSE.

11:41:58 15 (PLAINTIFF'S EXHIBIT 4826 WAS MARKED FOR IDENTIFICATION.)

11:42:01 16 MR. DESMARAIS:

11:42:01 17   Q.   NOW TURNING THEN BACK TO ARISTA, IS IT NECESSARY FOR

11:42:05 18 ARISTA TO COPY CISCO'S CLI OR USER MANUALS OR OTHER USER

11:42:13 19 INTERFACE FEATURES IN ORDER TO COMPETE WITH CISCO LIKE THESE

11:42:16 20 OTHER COMPANIES?

11:42:17 21   A.   BY COPYING YOU ARE SAYING NOT CISCO-LIKE OR THE OVERALL

11:42:23 22 APPROACH, IS IT NECESSARY TO STEAL THE COMMANDS TO INFRINGE

11:42:26 23 UPON OUR PATENTS TO COPY, LITERALLY, THE USER MANUALS, THE

11:42:31 24 HIERARCHIES, THE HELPDESC SCREENS, THE ANSWER IS NO. ALL

11:42:36 25 COMPANIES USE A COMBINATION OF DIFFERENT WAYS OF TAKING THE

11:42:39 1   COMPLEXITY OUT OF THOSE COMPUTER SYSTEMS, AND OTHER PEOPLE HAVE

11:42:43 2   BEEN ABLE TO DO THIS IN DIFFERENT WAYS WITHOUT BLATANT COPYING

11:42:48 3   ON CATEGORIES.

11:42:50 4   Q.   NOW YOU HAVE BEEN WITH CISCO SINCE 1991. IN THAT TIME,

11:42:54 5   HOW MANY CASES LIKE ARISTA HAVE YOU SEEN?

11:42:55 6   A.   JUST ONE OTHER.

11:42:56 7   Q.   IN GENERAL TERMS, WHAT WAS THAT OTHER CASE?

11:43:01 8   A.   IT'S A CASE WITH A CHINESE MANUFACTURER CALLED HUAWEI.

11:43:03 9   VERY, VERY SIMILAR TO ARISTA IN THE FACT THAT THEY COPIED OUR

11:43:07 10   COMMAND LINED INTERFACE CAPABILITIES, A NUMBER OF OUR PATENTS,

11:43:13 11   SIMILAR IN THAT THEIR USER MANUALS ACTUALLY HAD THE SAME TYPE

11:43:17 12   OF MISTAKES IN OUR USER MANUALS, WHICH MEANS THEY DIDN'T EVEN

11:43:22 13   READ THEM OR CORRECT THEM. SIMILAR HELP SCREENS.

11:43:24 14   THEY DID STEAL SOURCE CODE. THEY DID NOT HAVE THE NUMBER

11:43:27 15   OF EXECUTIVES THAT WERE AT CISCO. SO THEY MAY NOT HAVE BEEN

11:43:30 16   AWARE OF OUR PATENTS, THEY MAY NOT, THERE WAS NO CASE BEFORE

11:43:33 17   THAT ON US HOLDING PEOPLE VERY ACCOUNTABLE FOR OUR PROPRIETARY

11:43:39 18   COMMAND LINE INTERFACE TYPE CAPABILITIES.

11:43:41 19   SO SIMILAR IN MOST WAYS, DIFFERENT IN PERHAPS THAT THEY

11:43:46 20   DID NOT HAVE THE PRIOR CISCO EXECS OR KNOWLEDGE OF OUR PATENTS

11:43:51 21   AND OUR PRODUCT STRENGTH LIMITATION.

11:43:52 22   Q.   WOULD YOU TURN IN YOUR BINDER TO TRIAL EXHIBIT 4671, IT'S

11:43:57 23   ALREADY ADMITTED, SO I WILL PUT IT UP ON THE OVERHEAD

11:44:00 24   PROJECTOR.

11:44:04 25   IS THIS THE COMPLAINT CISCO FILED AGAINST HUAWEI?

11:53:49 1   Q.   OKAY. AND IN FACT, YOU COMPARED THIS TRANSITION AT THIS

11:53:52 2   TIME BEGINNING OF VOICEOVER INTERNET OR USING VIDEO OVER THE

11:53:54 3   INTERNET, BIG TRANSITIONS; RIGHT?

11:53:56 4   A.   THAT'S FAIR.

11:53:57 5   Q.   AND YOU VIEWED ARISTA AS A VERY STRONG COMPETITOR IN THIS

11:54:03 6   SOFTWARE DEFINED NETWORK MARKET; RIGHT?

11:54:05 7   A.   ONE OF MULTIPLE COMPETITORS IN THIS MARKET, YES.

11:54:07 8   Q.   AND I THINK YOU DESCRIBED IN YOUR DIRECT EXAMINATION

11:54:11 9   ARISTA IS A GOOD COMPETITOR, A TOUGH COMPETITOR; RIGHT?

11:54:14 10 A.   THAT'S CORRECT.

11:54:15 11 Q.   AND CERTAINLY THEY WERE ON YOUR RADAR, ARISTA, BY LATE

11:54:19 12 2010, CORRECT?

11:54:20 13 A.   THAT WOULD BE PROBABLY PRETTY ACCURATE, THAT'S WHEN THEY

11:54:25 14 BROUGHT IN THE NEW HIGH END SWITCH, AND THE TRULY -- IT WAS

11:54:30 15 2011 WHERE WE BEGAN TO SEE THEM MORE IN THE DATA CENTER

11:54:33 16 RESOLVE.

11:54:33 17 Q.   AND YEAH. AND IN LATE 2010, ONE OF THE LEADING INDUSTRY

11:54:39 18 PUBLICATIONS FOUND THAT ARISTA OUTPERFORMED CISCO IN

11:54:45 19 HEAD-TO-HEAD COMPETITION IN TESTING THEY HAD DONE; RIGHT?

11:54:51 20 A.   AND WHAT WAS THE DATE AGAIN, SIR?

11:54:53 21 Q.   2010.

11:54:56 22 A.   I WOULD HAVE TO SEE THE DATA. IF YOU ARE TALKING ABOUT A

11:54:59 23 LOW END LATENCY PINPOINT PRODUCT, THAT MAY BE ACCURATE. THERE

11:55:05 24 PROBABLY, DEPENDING ON WHAT TYPE OF ANALYSIS YOU ARE DOING WHEN

11:55:08 25 YOU DO COMPUTER TESTING, IT DEPENDS ON YOUR APPLICATIONS, WHICH

11:55:12 1   INDUSTRY YOU ARE GOING WITH, ET CETERA.

11:55:15 2   SO I COULDN'T RESPOND TO A GENERAL ONE. I WOULD SAY IF

11:55:18 3   YOU ARE TALKING LOW LATENCY FOR A PRODUCT, THE ARISTA HAD SOME

11:55:21 4   ADVANTAGES IN THAT AREA.

11:55:22 5   Q.   LET'S LOOK AT DOCUMENT -- EXHIBIT NUMBER 5416. IT'S IN

11:55:27 6   ONE OF THOSE BINDERS WE HANDED YOU, MR. CHAMBERS.

11:55:29 7   A.   OKAY. THANK YOU.

11:55:30 8   Q.   5416. DO YOU HAVE IT THERE BEFORE YOU?

11:55:36 9   A.   YES, I DO.

11:55:38 10   Q.   DO YOU RECOGNIZE IT AS AN ARTICLE BY *NETWORK WORLD* IN

11:55:43 11   EARLY 2010, JANUARY?

11:55:46 12   A.   JUST GIVE ME A SECOND. JANUARY 18, 2010, AND IT IS

11:55:52 13   *NETWORK WORLD*, YES.

11:55:54 14   Q.   AND THAT'S A PUBLICATION, SOMETIMES YOU GIVE INTERVIEWS TO

11:55:57 15   THAT COVER THE NETWORKING FIELD?

11:55:59 16   A.   THAT IS CORRECT.

11:56:00 17   Q.   YOU REVIEW THAT FROM TIME TO TIME?

11:56:02 18   A.   THAT IS CORRECT.

11:56:03 19   Q.   DO YOU RECALL LEARNING IN 2010 THAT CISCO HAD BEATEN --

11:56:07 20   EXCUSE ME, ARISTA HAD BEATEN CISCO IN A HEAD-TO-HEAD TEST

11:56:11 21   PUBLISHED HERE BY *NETWORK WORLD*?

11:56:12 22   A.   I DON'T KNOW THAT IF I WOULD RECALL THE SPECIFICS ON THAT.

11:56:16 23   YOU FACE VARIOUS COMPETITORS, SOMETIMES WE WIN, SOMETIMES WE

11:56:22 24   WOULD NOT, IN KEY TECHNOLOGY AREAS. IF THEY BEAT US IN THE

11:56:24 25   TEST AND THAT'S WHAT I SAID HERE, THEN THAT'S WHAT I ACCEPT AS

11:56:28   1   A FACT.

11:56:28   2   MR. VAN NEST: YOUR HONOR, I WOULD OFFER 5416 IN

11:56:30   3   EVIDENCE.

11:56:30   4   THE COURT: IS THERE ANY OBJECTION?

11:56:32   5   MR. DESMARAIS: NO, YOUR HONOR.

11:56:32   6   THE COURT: IT WILL BE ADMITTED.

11:56:35   7   (DEFENDANT'S EXHIBIT 5416 WAS ADMITTED INTO EVIDENCE.)

11:56:35   8   BY MR. VAN NEST:

11:56:35   9   Q.   THIS IS THE *NETWORK WORLD* ARTICLE, AND AGAIN *NETWORK WORLD*

11:56:38 10   COVERS THE NETWORKING BUSINESS, MR. CHAMBERS?

11:56:42 11   A.   YES, IT DOES.

11:56:43 12   Q.   AND RIGHT THERE, THIS IS AN ARTICLE IN JANUARY OF 2010,

11:56:47 13   CORRECT, WE HAVE THAT DATE RIGHT UNDER THE HEADER?

11:56:49 14   A.   YES, WE DO, UH-HUH.

11:56:51 15   Q.   AND LET'S BLOW UP THAT FIRST PARAGRAPH.

11:56:56 16   "AS DATA CENTER MANAGERS CONSOLIDATE AND VIRTUALIZE THEIR

11:57:01 17   SERVERS, THE NEXT ORDER OF BUSINESS BECOMES MOVING ALL THAT

11:57:05 18   TRAFFIC. ENTER TOP OF RACK DATA CENTER SWITCHES THAT OFFER

11:57:08 19   SPEED, SCALEABILITY, REDUNDANCY, VIRTUALIZATION, SUPPORT AND

11:57:13 20   OTHER FEATURES NOT AVAILABLE IN GARDEN VARIETY ETHERNET

11:57:16 21   SWITCHES."

11:57:18 22   THEY ARE TALKING ABOUT THIS TRANSITION TO SOFTWARE DEFINED

11:57:21 23   NETWORKING IN THE CLOUD; RIGHT?

11:57:23 24   A.   I WOULD ASSUME THAT IS LOGICAL THERE, I HAVEN'T READ THE

11:57:29 25   ARTICLE, OR AT LEAST I HAVEN'T READ IT RECENTLY, IF I HAVE EVER

11:57:33   1   READ IT. SO I'M JUST, BASED UPON YOUR COMMENTS, THE ONE

11:57:36   2   PARAGRAPH HERE, YES.

11:57:38   3   Q.   AND -- OKAY.

11:57:38   4   AND THE NEXT PARAGRAPH DOWN TALKS ABOUT A TEST OF 24, THIS

11:57:43   5   IS THE -- THIS TEST ANALYZES SWITCHES, THERE WE GO. AT LEAST

11:57:50   6   2410 GIGABIT INTERFACES FROM ARISTA, BLADE, CISCO, DELL, AND

11:57:54   7   OTHERS; RIGHT?

11:57:55   8   A.   THAT IS CORRECT.

11:57:56   9   Q.   AND THEY CLAIM THEY COMPARED THESE IN TEN DIFFERENT WAYS

11:57:59 10   AND SUBJECTED THEM TO MONTHS OF GRUELLING PERFORMANCE TESTS;

11:58:05 11   RIGHT?

11:58:05 12   A.   YES, IT DOES.

11:58:06 13   Q.   AND THEN THEIR CONCLUSION WAS, "WITH THE BEST COMBINATION

11:58:10 14   OF FEATURES AND PERFORMANCE" -- EXCUSE ME.

11:58:14 15   "WHILE EACH OFFERED SOME STANDOUT QUALITIES, WE'RE

11:58:17 16   SINGLING OUT ARISTA'S DCS-7124 AND BLADE'S G8124 AS TOP PICKS.

11:58:27 17   WITH THE BEST COMBINATION OF FEATURES AND PERFORMANCE,

11:58:29 18   ESPECIALLY IN THE AREAS OF LATENCY AND JITTER, BOTH SWITCHES

11:58:33 19   EARN CLEAR CHOICE AWARDS."

11:58:35 20   DO YOU SEE THAT?

11:58:35 21   A.   YES, I DO.

11:58:36 22   Q.   IS THIS THE TYPE OF THING THAT YOUR STAFF WOULD BRING TO

11:58:39 23   YOUR ATTENTION FROM TIME TO TIME, MR. CHAMBERS?

11:58:42 24   A.   PERHAPS FROM TIME TO TIME.

11:58:44 25   AGAIN, I WOULD VIEW IT AS MY EARLIER COMMENTS, I WOULD

11:58:47 1   VIEW THIS AS A PINPOINT PRODUCT A GOOD COMPETITOR IN LOW

11:58:51 2   LATENCY. SO YES, THIS IS A GOOD PRODUCT.

11:58:53 3   Q.   AND BY 2011 YOU WERE ACTUALLY SEEING A LOT ABOUT ARISTA IN

11:58:58 4   THE VERY SPECIFIC CUSTOMER BRIEFINGS YOU RECEIVED BEFORE

11:59:01 5   CUSTOMER MEETINGS; IS THAT RIGHT?

11:59:03 6   A.   YEAH. THEY WERE MAKING THE RADAR SCREEN PRETTY GOOD.

11:59:06 7   EACH TIME YOU GO INTO CUSTOMERS, YOU TALK TO WHAT IS WORKING

11:59:09 8   FOR US AND WHAT WE HAVE TO DO BETTER. YOU ALSO SAY WHO ARE THE

11:59:13 9   KEY COMPETITORS, AND THEY WERE ONE OF THE COMPETITORS. 2011

11:59:16 10   WAS PROBABLY THE FIRST TAME I BEGAN TO SEE THEM ON A LARGER

11:59:19 11   SCALE.

11:59:20 12   Q.   AND FROM TIME TO TIME BACK WHEN YOU WERE CEO, YOU ACTUALLY

11:59:23 13   DID VISIT CUSTOMERS AND TALK WITH CUSTOMER; RIGHT?

11:59:25 14   A.   ALL THE TIME.

11:59:26 15   Q.   ESPECIALLY THE BIG CUSTOMERS?

11:59:27 16   A.   BIG AND SMALL, YES.

11:59:29 17   Q.   AND SO IF ONE OF YOUR TOP SALES FOLKS THOUGHT THEY WERE IN

11:59:34 18   TROUBLE OR CONCERNED OR WORRIED, THAT MIGHT BE AN OCCASION TO

11:59:37 19   BRING MR. CHAMBERS IN TO TALK WITH THE CUSTOMER; RIGHT?

11:59:39 20   A.   I MET WITH THE CUSTOMERS ON A REGULAR BASIS, BOTH

11:59:45 21   CUSTOMERS THAT WE WERE WINNING IN AND CUSTOMERS WHERE WE HAD

11:59:47 22   GOOD COMPETITORS IN, SO YES.

11:59:49 23   Q.   WOULD YOU OPEN YOUR BINDER UP MR. CHAMBERS TO 5495. DO

12:00:06 24   YOU HAVE IT THERE, MR. CHAMBERS? AND I'M GOING TO SHOW IT ON

12:00:08 25   THE SCREEN, EITHER WAY.

12:00:09   1   THIS IS THE TYPE OF BRIEFING THAT YOU RECEIVED

12:00:10   2   PERIODICALLY BEFORE CUSTOMER MEETINGS; RIGHT?

12:00:12   3   A.   YES, I GET PROBABLY TEN OF THESE A DAY ON A VARIOUS DAY

12:00:18   4   OUT IN THE FIELD, SO IT WAS VERY CLASSIC IN TERMS OF THE

12:00:21   5   FORMAT.

12:00:21   6   Q.   AND THIS IS THE FORMAT YOU ARE USED TO SEEING AND THE

12:00:24   7   FORMAT YOU WOULD REVIEW ON THE WAY TO SEEING THE CUSTOMER?

12:00:24   8   A.   YES, SIR.

12:00:27   9   Q.   AND THIS CUSTOMER IS MICROSOFT?

12:00:28   10   A.   YES, IT IS.

12:00:29   11   Q.   THAT'S A BIG CUSTOMER?

12:00:30   12   A.   YES, IT IS. BIG CUSTOMER, KEVIN TURNER, VERY IMPORTANT

12:00:33   13   GUY.

12:00:33   14   Q.   OKAY. AND THE DATE OF THIS IS MARCH OF 2011; RIGHT?

12:00:35   15   A.   THAT IS CORRECT.

12:00:36   16   Q.   AND IF WE GO DOWN TO THE BOTTOM, THERE'S A CATEGORY "JOHN

12:00:40   17   AND CISCO'S OBJECTIVES," DO YOU SEE THAT?

12:00:42   18   A.   I DO.

12:00:43   19   Q.   AND THE OBJECTIVE THERE, THE VERY FIRST OBJECTIVE WAS TO

12:00:48   20   BLOCK ARISTA FROM GAINING A FIRST PRODUCTION DEPLOYMENT AT

12:00:53   21   MICROSOFT IN WHAT IS CALLED THE "SPINE" A STRATEGIC NETWORK

12:00:58   22   LAYER IN THE MEGASCALE DATA CENTER; DO YOU SEE THAT?

12:01:01   23   A.   I DO.

12:01:02   24   Q.   AND THAT WAS YOUR STAFF TELLING YOU THAT WAS AT LEAST ONE

12:01:06   25   OF THE OBJECTIVES OF YOUR MEETING, THAT'S THE PURPOSE FOR THAT?

12:01:10 1   A.   THAT WOULD PROBABLY BE THE FIELD TELLING US THAT. WHAT

12:01:13 2   THEY DO IS TELL YOU, HERE'S WHAT WE WOULD LIKE TO DO IN THE

12:01:16 3   MEETINGS, AND WHO WOULD BE THERE. IT DOESN'T MEAN I

12:01:20 4   NECESSARILY DID WHAT THEY ASKED ME TO.

12:01:21 5   Q.   SURE. YOU'RE THE BOSS, RIGHT? YOU COULD DO WHAT YOU

12:01:24 6   WANT.

12:01:24 7   A.   MOST OF THE TIME.

12:01:25 8   Q.   GOING A LITTLE FURTHER DOWN, THERE WAS SPECIFIC DISCUSSION

12:01:28 9   HERE ABOUT AN AWARD, "A POSSIBLE AWARD, MICROSOFT SEARCH, IT'S

12:01:34 10   RIGHT THERE AT THE BOTTOM OF THAT FIRST PAGE, MICROSOFT SEARCH

12:01:38 11   IS ON THE VERGE OF DEPLOYING A $2 MILLION INVESTMENT WITH

12:01:42 12   ARISTA WHICH WOULD REPRESENT A SIGNIFICANT BEACHHEAD."

12:01:45 13   AND HE GOES ON TO DESCRIBE HOW BIG THE MICROSOFT SALES

12:01:50 14   OPPORTUNITY IS FOR CISCO, $100 MILLION ANNUAL FRANCHISE; DO YOU

12:01:55 15   SEE THAT.

12:01:55 16   A.   YES, I DO.

12:01:56 17   Q.   NOW YOUR STAFF ALSO INCLUDES YOU IN ON WHAT THEY THOUGHT

12:02:02 18   WAS HAPPENING IN THIS COMPETITION BETWEEN CISCO AND ARISTA;

12:02:06 19   RIGHT?

12:02:06 20   A.   THAT IS THEIR PERSPECTIVE, YES.

12:02:09 21   Q.   OKAY. LET'S GO TO THE NEXT BULLET, TOP OF THE NEXT PAGE.

12:02:13 22   AND I WILL SHOW IT ON THE SCREEN, MR. CHAMBERS, FOR YOU.

12:02:16 23   THIS IS YOUR STAFF TALKING TO YOU, AND THEY SAID "ARISTA

12:02:18 24   IS OUT PERFORMING CISCO ON PRICE, PRODUCT, ROAD MAP AND

12:02:26 25   VISION."

12:02:26 1   RIGHT? THAT'S WHAT YOUR STAFF IS TELLING YOU IN 2011,

12:02:31 2   CORRECT?

12:02:31 3   A.   AGAIN, I'M NOT DRAWING A DISTINCTION OTHER THAN IT'S THE

12:02:36 4   SALES TEAM WHO WRITES THIS UP. SO IT'S THE LOCAL SALES TEAM

12:02:39 5   SAYING THIS, THAT IS CORRECT.

12:02:40 6   Q.   OKAY. AND THEY'RE IDENTIFYING PRICE, PRODUCT, ROAD MAP,

12:02:45 7   AND VISION AS THE THINGS IN WHICH ARISTA IS AHEAD OF CISCO AT

12:02:50 8   THIS TIME; RIGHT?

12:02:50 9   A.   THAT IS THEIR PERSPECTIVE, YES.

12:02:51 10 Q.   THAT PRETTY MUCH COVERS THE WATERFRONT, DOESN'T IT?

12:02:55 11 A.   IT COVERS A LOT OF AREAS; DO YOU WANT ME TO COMMENT IN

12:02:58 12 TERMS OF MY VIEW ON THIS OR --

12:03:00 13 Q.   LET'S GO ON, MR. CHAMBERS.

12:03:01 14   YOU WILL GET A CHANCE WHEN MR. DESMARAIS GETS BACK UP TO

12:03:07 15 ANSWER WHATEVER QUESTIONS HE THINKS ARE LEFT.

12:03:09 16   I WANT TO GO TO THE NEXT SENTENCE BECAUSE IT SAYS, "BASED

12:03:12 17 ON MULTIPLE MISSED CISCO ROAD MAP COMMITMENTS IN THE DATA

12:03:16 18 CENTER, MICROSOFT FEEL LESS RISK WITH UNPROVEN ARISTA;" DO YOU

12:03:20 19 SEE THAT.

12:03:20 20 A.   YES, I DO.

12:03:21 21 Q.   NOW A MULTIPLE -- A ROAD MAP COMMITMENT IS A COMMITMENT BY

12:03:27 22 CISCO THAT WE ARE GOING TO HAVE A PRODUCT READY FOR YOU AT A

12:03:30 23 CERTAIN TIME; RIGHT?

12:03:30 24 A.   YOU SHARE THAT WITH YOUR CUSTOMERS. MOST OF THE TIMES,

12:03:33 25 YOU HIT IT, SOMETIMES YOU DON'T.

12:03:35 1   Q.   AND THAT'S WHAT THAT MEANS. IN OTHER WORDS, THE ROAD MAP

12:03:38 2   COMMITMENT MEANS I'M GOING TO HAVE A PRODUCT READY FOR YOU IN A

12:03:41 3   CERTAIN TIME OR IN A CERTAIN RANGE; RIGHT?

12:03:43 4   A.   THAT'S WHAT THE ROAD MAP IS ALL ABOUT. THAT IS CORRECT.

12:03:45 5   Q.   AND YOU WERE BEING TOLD BY YOUR STAFF THAT CISCO HAD

12:03:48 6   ALREADY MISSED MULTIPLE ROAD MAP COMMITMENTS, AND THAT'S WHY

12:03:53 7   MICROSOFT WAS ABOUT TO AWARD BUSINESS TO ARISTA.

12:03:56 8   THAT'S WHAT YOU UNDERSTOOD; RIGHT?

12:03:57 9   A.   THAT'S WHAT THE FIELD TEAM WOULD SAY ON THIS, CORRECT.

12:04:03 10   MR. VAN NEST: YOUR HONOR, I'M ABOUT TO GO ON TO

12:04:05 11   ANOTHER DOCUMENT.

12:04:06 12   THE COURT: THIS WOULD BE A GOOD TIME TO STOP THEN.

12:04:06 13   ALL RIGHT. WE WILL RETURN AFTER LUNCH.

12:04:11 14   LADIES AND GENTLEMEN, LET'S COME BACK AT 1:05.

12:04:21 15   (RECESS FROM 12:04 P.M. UNTIL 1:05 P.M.)

01:06:48 16   (JURY OUT AT 1:06 P.M.)

01:06:48 17   THE COURT: GOOD AFTERNOON, EVERYONE. PLEASE BE

01:06:50 18   SEATED. WE ARE ON THE OUTSIDE THE PRESENCE OF THE JURY.

01:06:54 19   MR. VAN NEST, YOU HAD AN ISSUE?

01:06:55 20   MR. VAN NEST: YES. WE DO, YOUR HONOR.

01:06:57 21   WE HAVE TWO ISSUES. ONE THAT REQUIRES A WARNING, I THINK,

01:07:00 22   AND THE OTHER THAT REQUIRES STRIKING SOME TESTIMONY.

01:07:03 23   THIS MORNING MR. DESMARAIS ELICITED AGAIN, IN VIOLATION OF

01:07:06 24   THE MOTION IN LIMINE, TESTIMONY ABOUT PATENTS IN PLURAL, AND HE

01:07:12 25   WENT BEYOND THAT TO HAVE MR. CHAMBERS TESTIFY THAT ALL THE

01:18:20 1   IMPLICATION. AND THAT'S ALL. SO AS LONG AS -- OKAY. I'M DONE

01:18:26 2   NOW.

01:18:26 3   THE COURT: ALL RIGHT. LET'S BRING THE JURY IN.

01:18:31 4   MR. VAN NEST: THANK YOU, YOUR HONOR.

01:18:36 5   (JURY IN AT 1:19 P.M.)

01:19:38 6   THE COURT: GOOD AFTERNOON, EVERYONE. ALL OF OUR

01:19:40 7   JURORS ARE BACK AND MR. CHAMBERS HAS COME BACK TO THE WITNESS

01:19:45 8   STAND.

01:19:46 9   MR. VAN NEST IS GOING TO CONTINUE WITH HIS

01:19:48 10   CROSS-EXAMINATION.

01:19:49 11   LADIES AND GENTLEMEN, THERE WAS ONE ANSWER THAT WAS,

01:19:54 12   QUESTION AND ANSWER THAT WAS GIVEN IN MR. CHAMBERS'S DIRECT

01:20:00 13   EXAMINATION, THAT'S WHEN MR. DESMARAIS WAS ASKING THE

01:20:03 14   QUESTIONS, AND IT HAD TO DO WITH THE DIGITAL EQUIPMENT

01:20:06 15   CORPORATION HAVING AN AGREEMENT WITH CISCO IN THE EARLY 1990'S.

01:20:11 16   I AM GOING TO STRIKE THAT QUESTION AND ANSWER AND YOU ARE

01:20:15 17   NOT TO CONSIDER IT IN ANY WAY.

01:20:19 18   ALL RIGHT. MR. VAN NEST WOULD YOU LIKE TO CONTINUE?

01:20:21 19   MR. VAN NEST: I WOULD, YOUR HONOR.

01:20:22 20   THE COURT: GO AHEAD, PLEASE.

01:20:23 21   Q.   MR. CHAMBERS, GOOD AFTERNOON.

01:20:24 22   A.   GOOD AFTERNOON, MR. VAN NEST.

01:20:25 23   Q.   WOULD YOU OPEN YOUR NOTEBOOK TO TX 5423, PLEASE.

01:20:37 24   AND DO YOU RECOGNIZE THAT AS ANOTHER ONE OF THE BRIEFINGS

01:20:40 25   THAT YOU TYPICALLY RECEIVE BEFORE TALKING WITH CUSTOMERS?

01:20:44 1   A.   YES, I DO.

01:20:45 2   Q.   THE SAME FORMAT AS THE ONE WE LOOKED AT EARLIER?

01:20:48 3   A.   LET ME JUST LOOK FOR A SECOND. PRETTY SIMILAR, YES, SIR.

01:20:55 4   MR. VAN NEST: OKAY. I WOULD OFFER 5423 INTO

01:20:57 5   EVIDENCE YOUR HONOR.

01:20:58 6   THE COURT: ANY OBJECTION?

01:20:59 7   MR. DESMARAIS: NO.

01:21:00 8   THE COURT: IT WILL BE ADMITTED.

01:21:03 9   (DEFENDANT'S EXHIBIT 5423 WAS ADMITTED INTO EVIDENCE.)

01:21:03 10   BY MR. VAN NEST:

01:21:03 11   Q.   MR. CHAMBERS, ADP, ALSO A BIG CUSTOMER OF CISCO; RIGHT?

01:21:08 12   A.   YES, THEY ARE.

01:21:09 13   Q.   AND MIKE CAPONE WAS THE CHIEF INFORMATION OFFICER THERE?

01:21:12 14   A.   YES, HE IS.

01:21:14 15   Q.   THIS IS ANOTHER CLIENT THAT YOU HAD OCCASION TO VISIT BACK

01:21:17 16   WHEN YOU WERE CEO?

01:21:18 17   A.   THAT IS CORRECT.

01:21:19 18   Q.   AND AN IMPORTANT CLIENT AT THAT; RIGHT?

01:21:21 19   A.   ONE OF THE MANY IMPORTANT CLIENTS, YES.

01:21:24 20   Q.   THEY WERE A CLIENT THAT WAS GOING TO THE CLOUD, AS THEY

01:21:28 21   WOULD PUT IT, ALONG WITH OTHERS; RIGHT?

01:21:29 22   A.   THAT WOULD BE CORRECT.

01:21:30 23   Q.   AND THIS IS A BRIEFING YOU RECEIVED LIKE THE ONE WE LOOKED

01:21:33 24   AT THIS MORNING. AND IT SHOWS YOU AND SOME OTHERS FROM CISCO

01:21:37 25   AS ATTENDEES, JOHN CHAMBERS, CEO, SOME OTHER FOLKS AS WELL FROM

01:21:44 1   ADP. THAT'S THE ATTENDEE LIST?

01:21:47 2   A.   IT'S MUCH LIKE, SOMETIMES THOSE CHANGE AT THE LAST MOMENT,

01:21:50 3   BUT I HAVE NO REASON TO BELIEVE THAT WASN'T CORRECT.

01:21:53 4   Q.   AND THIS IS ALSO IN THE 2011 TIME PERIOD, IF WE CAN GO TO

01:21:57 5   THE TOP, THIS SAYS JULY 14, 2011. DO YOU SEE THAT UP HERE IN

01:22:00 6   THE TOP OF THE PAGE? IF YOU PREFER TO LOOK AT IT ON THE

01:22:03 7   SCREEN, YOU CAN, MR. CHAMBERS.

01:22:04 8   A.   IT SAYS, 14, OKAY.

01:22:08 9   Q.   SO IF WE COULD GO DOWN TO THE SECOND PAGE, PAGE 3,

01:22:12 10   COMPETITIVE ISSUES, URGENT ACCOUNTS, THIS IS ON THE THIRD PAGE,

01:22:19 11   MR. CHAMBERS. AGAIN, I'VE GOT IT ON THE SCREEN.

01:22:22 12   A.   OKAY. I'VE GOT IT, SIR.

01:22:23 13   Q.   ADP JUST AWARDED ARISTA ITS 10G, THAT'S 10 GIGABIT DATA

01:22:29 14   CENTER SWITCHING EXPANSION, THAT'S WHAT THIS SAYS?

01:22:33 15   A.   THAT'S CORRECT.

01:22:33 16   Q.   AND DC, IN THIS CONTEXT THAT MEANS DATA CENTER, CORRECT?

01:22:36 17   A.   DC, YES.

01:22:37 18   Q.   10G IS GIGABIT SPEED?

01:22:41 19   A.   THAT'S CORRECT.

01:22:42 20   Q.   THE REASON GIVEN FOR SELECTION IS 10G FUNCTIONALITY, ADP

01:22:46 21   WANTED FROM CISCO, IS IN THE NEXUS 7K F2 CARD, NOT AVAILABLE

01:22:52 22   UNTIL NOVEMBER 2011, AND CISCO WOULD NOT COMMIT TO DELIVERY

01:22:58 23   WITH FINANCIAL PENALTIES FOR DELAY; DO YOU SEE THAT?

01:23:01 24   A.   YES, I DO.

01:23:02 25   Q.   THAT MEANS THAT THE PRODUCT THAT YOU WERE CLAIMING COULD

01:23:06 1   COMPETE WITH ARISTA WOULDN'T BE READY UNTIL NOVEMBER WHICH WAS

01:23:09 2   SEVERAL MONTHS LATER THAN THE CUSTOMER WANTED; RIGHT?

01:23:12 3   A.   THAT WOULD BE ONE OF THE ELEMENTS OF THE DECISION, YES,

01:23:14 4   SIR.

01:23:14 5   Q.   AND IT LOOKS LIKE, AS THE NEXT LINE SHOWS, ACTUALLY CISCO

01:23:20 6   MADE SOME OFFERS, SOME FINANCIAL OFFERS TO SWEETEN THE DEAL AND

01:23:25 7   ATTEMPT TO HOLD OFF THEIR SELECTION OF ARISTA; RIGHT?

01:23:28 8   A.   LET ME JUST READ IT FOR A MOMENT, PLEASE.

01:23:32 9   Q.   LET'S PUT IT UP FOR THE JURORS. LET'S HIGHLIGHT THE NEXT

01:23:36 10   SECTION AS WELL. DURING THE NEXUS VERSUS ARISTA NEGOTIATION,

01:23:41 11   IN PLACE OF DELIVERY PENALTIES, CISCO OFFERED ADP, AN EXTENDED

01:23:45 12   LOAN OF CURRENTLY AVAILABLE CARDS VALUED UNTIL THE F2 CARD,

01:23:48 13   THAT'S THE NEW ONE, IS DELIVERED, SERVICES VALUED AT $200,000

01:23:54 14   IN LIEU OF A DELIVERY PENALTY; DO YOU SEE THAT?

01:23:56 15   A.   YES, I DO.

01:23:57 16   Q.   THAT'S REFLECTING THAT IN THE NEGOTIATIONS TO KEEP ARISTA

01:24:02 17   OUT OF THIS ACCOUNT, CISCO MADE SOME FINANCIAL OFFERS TO MAKE

01:24:05 18   IT MORE ATTRACTIVE FOR THE CUSTOMER; RIGHT?

01:24:07 19   A.   I WOULD IMAGINE THERE WERE MORE THAN FINANCIAL OFFERS, BUT

01:24:09 20   THAT'S PART OF THE ELEMENT, YES.

01:24:11 21   Q.   THIS MAY BE A SUMMARY AND THERE MAY BE MORE INDEED, BUT

01:24:15 22   THIS IS WHAT WE'VE GOT IN THE DOCUMENTS WRITTEN BY YOUR SALES

01:24:18 23   FOLKS; RIGHT?

01:24:18 24   A.   THAT IS CORRECT.

01:24:19 25   Q.   OKAY. AND NOTWITHSTANDING ALL THOSE OFFERS AND

01:24:22 1   NOTWITHSTANDING ALL THOSE BENEFITS, AS THIS DOCUMENT REFLECTS,

01:24:25 2   ARISTA WAS STILL THE SELECTED VENDOR; RIGHT?

01:24:27 3   A.   YES.   IF I MAY ADD, I THINK THAT BOTH IN THE MICROSOFT

01:24:33 4   EXAMPLE AND THE ADP EXAMPLE, CISCO DID VERY WELL IN THOSE

01:24:36 5   ACCOUNTS AS WELL.

01:24:37 6   Q.   OKAY. NOW BY 2013, THE PRESS WAS ASKING YOU,

01:24:43 7   MR. CHAMBERS, WHAT IS CISCO GOING TO DO ABOUT ARISTA IN THIS

01:24:46 8   COMPETITION IN THE SDN MARKET; RIGHT?

01:24:49 9   A.   THAT WOULD BE FAIR.

01:24:51 10   Q.   OKAY. AND YOU WERE TELLING THE PRESS THAT YOU KNEW EVERY

01:24:56 11   ACCOUNT ARISTA WAS IN AND EXACTLY WHAT ARISTA WAS DOING; RIGHT?

01:25:01 12   A.   I WOULD BE SURPRISED IF IT WERE THAT DIRECT, BUT WAS I

01:25:06 13   VERY MUCH AWARE OF ARISTA AND VERY MUCH AWARE OF THEIR MOMENTUM

01:25:13 14   IN THE MARKET AND WHAT THEY WERE FOCUSSING ON, YES. I THINK

01:25:16 15   THEY HAD 4,000 ACCOUNTS, I DON'T THINK I WOULD BE AWARE OF

01:25:19 16   EVERY ACCOUNT.

01:25:19 17   Q.   OKAY. WELL, LET'S TAKE A LOOK AT HOW DIRECT YOU WERE.

01:25:22 18   WOULD YOU LOOK AT TX 8193, PLEASE. IT'S IN YOUR BINDER NEAR

01:25:30 19   THE BACK. DO YOU HAVE IT?

01:25:36 20   A.   YES, I DO.

01:25:37 21   Q.   OKAY. THAT'S AN ARTICLE IN *BARREN'S*; RIGHT. *BARREN'S* IS

01:25:43 22   A FINANCIAL PUBLICATION, CORRECT?

01:25:45 23   A.   YES, IT IS.

01:25:46 24   Q.   AND *BARREN'S* IS ONE OF THE PUBLICATIONS YOU GIVE

01:25:49 25   INTERVIEWS TO FROM TIME TO TIME?

02:09:22 1   Q.   OKAY. AND JUST AGAIN, FOR SAKE OF THE CHRONOLOGY, WHAT

02:09:26 2   YEAR WAS THAT?

02:09:27 3   A.   THAT WAS 2004.

02:09:28 4   Q.   NOW, AND YOU'VE MENTIONED ANDY BECHTOLSHEIM AND DAVID

02:09:33 5   SHERATON, HOW DID YOU KNOW DAVID SHERATON?

02:09:36 6   A.   DAVID SHERATON WAS MY PH.D. ADVISOR AT STANFORD

02:09:42 7   UNIVERSITY.

02:09:42 8   Q.   AND HOW DID YOU KNOW ANDY BECHTOLSHEIM?

02:09:44 9   A.   DAVID INTRODUCED ME TO ANDY IN CONNECTION WITH GRANITE

02:09:48 10   SYSTEMS. DAVID AND ANDY WERE THE COFOUNDERS OF GRANITE.

02:09:52 11   I WORKED WITH ANDY FOR SEVERAL YEARS WHILE AT CISCO, AND

02:09:55 12   ANDY IS ONE OF THE SILICON VALLEY'S TRUE GENIUSES, IN MY

02:10:00 13   OPINION.

02:10:01 14   Q.   SO WHEN YOU AND MR. BECHTOLSHEIM AND MR. SHERATON STARTED

02:10:05 15   ARISTA, DID YOU INTEND TO MAKE ETHERNET SWITCHES?

02:10:10 16   A.   NO. OUR ORIGINAL PRODUCT WAS A VPN GATEWAY, A PRODUCT FOR

02:10:16 17   CREATING VIRTUAL PRIVATE NETWORKS ACROSS THE INTERNET.

02:10:19 18   Q.   AND COULD YOU EXPLAIN JUST AT A HIGH LEVEL WHAT THAT

02:10:24 19   MEANS?

02:10:24 20   A.   YES, SURE. COMPANIES BUILD NETWORKS THAT CONNECT THEIR

02:10:29 21   OFFICES TOGETHER, CONNECT THEIR OFFICES TO DATA CENTERS. AND

02:10:35 22   IN ORDER TO DO THAT THEY TYPICALLY LEASE CIRCUITS, LINES FROM

02:10:40 23   TELEPHONE PROVIDERS. WE THOUGHT IT MIGHT BE MORE COST

02:10:43 24   EFFECTIVE TO USE THE INTERNET INSTEAD, BUT PERHAPS THE INTERNET

02:10:45 25   IS NOT RELIABLE ENOUGH.

02:10:47 1   THE IDEA WAS BY USING MOBILE INTERNET CONNECTIONS

02:10:51 2   TOGETHER, YOU COULD BUILD A RELIABLE PRIVATE CONNECTION BETWEEN

02:10:54 3   YOUR COMPANY'S CAMPUSES.

02:10:56 4   Q.   DID YOU ATTEMPT TO BUILD THAT VPN PRODUCT AT ARISTA?

02:11:00 5   A.   WE DID. WE BUILT SOME SOFTWARE. I HAD A WORKING

02:11:05 6   PROTOTYPE.

02:11:05 7   Q.   AND WHAT HAPPENED TO IT?

02:11:06 8   A.   WELL, I LOOKED INTO THE MARKET OPPORTUNITY AND CAME TO THE

02:11:10 9   CONCLUSION THAT THE COSTS DIDN'T ACTUALLY MAKE SENSE, AND THE

02:11:14 10 ECONOMICS DIDN'T SUPPORT ANY MARKET FOR OUR PRODUCT.

02:11:18 11 Q.   SO DID ARISTA DECIDE TO KILL THAT PRODUCT?

02:11:21 12 A.   WE DID. WE CANCELLED THE PRODUCT AND WENT FOR ABOUT TWO

02:11:25 13 WEEKS WITHOUT ANY IDEA OF WHAT WE WERE GOING TO BUILD OR HOW WE

02:11:29 14 WOULD SURVIVE AS A COMPANY.

02:11:30 15 Q.   OKAY. AND SO THEN WHAT HAPPENED AT ARISTA?

02:11:33 16 A.   WELL, THEN ANDY BECHTOLSHEIM CAME AND CALLED A MEETING AND

02:11:37 17 SHOWED US A DESIGN HE HAD BEEN WORKING ON FOR A NEW NETWORK

02:11:41 18 SWITCH.

02:11:42 19   AND THE NUMBER OF INNOVATIONS IN THIS DESIGN, I ALMOST

02:11:47 20 CRIED, WE LOOKED AT EACH OTHER AND SAID, WE'VE GOT TO BUILD

02:11:50 21 THAT SWITCH.

02:11:51 22 Q.   OKAY. AND JUST TELL US, AGAIN, AT A HIGH LEVEL, WHAT WAS

02:11:55 23 SO GOOD ABOUT IT?

02:11:55 24 A.   OH, IT HAD SO MANY INNOVATIONS. THE WAY THAT IT MANAGES

02:12:01 25 TRAFFIC, TRAFFIC COMES IN ONE PORT, HAS TO GO OUT ANOTHER PORT.

02:12:06 1   IT NEEDS BANDWIDTH WITHIN THE SWITCH. HOW DO YOU ALLOCATE THAT

02:12:12 2   BANDWIDTH, WHAT DO YOU DO WITH THE PACKETS WHILE YOU ARE

02:12:14 3   WAITING FOR THAT BANDWIDTH TO BE AVAILABLE? THERE WERE

02:12:17 4   INNOVATIONS IN THE WAY THE FABRIC ARCHITECTURE WORKED TO MANAGE

02:12:20 5   THOSE TRAFFIC FLOWS.

02:12:21 6   IN ADDITION TO THAT WERE IMPROVEMENTS TO THE WAY THE

02:12:24 7   COMPONENTS WERE TO ARRANGE IN SPACE TO LET IT COOL THE SWITCH

02:12:27 8   BETTER, AND COOLING IS A BIG PROBLEM FOR BUILDING HIGHER

02:12:30 9   CAPACITY DEVICES.

02:12:31 10   Q.   I WANT TO SHOW YOU DEMONSTRATIVE EXHIBIT 5594, AND ASK DO

02:12:42 11   YOU RECOGNIZE THIS?

02:12:43 12   A.   YES.

02:12:44 13   Q.   WHAT IS IT?

02:12:45 14   A.   THIS IS A MOCKUP OF OUR 7500 SWITCH, THE SWITCH I WAS

02:12:49 15   REFERRING TO EARLIER.

02:12:50 16   Q.   AND WHEN AT ARISTA DID YOU CREATE THIS STYROFOAM MOCKUP?

02:12:56 17   A.   I BELIEVE WE CREATED IT IN 2006.

02:12:58 18   Q.   AND USING THIS MOCKUP, CAN YOU GIVE THE JURY AN EXAMPLE OF

02:13:05 19   SOMETHING THAT MADE ARISTA'S DESIGN DIFFERENT FROM THE DESIGN

02:13:09 20   OF OTHER ETHERNET SWITCHES?

02:13:11 21   A.   SURE. IF YOU LOOK AT THE BACK, YOU WILL SEE ALL THE

02:13:14 22   CIRCLES.

02:13:17 23   Q.   YOU CAN TAKE IT UP THERE.

02:13:27 24   A.   THIS IS THE FRONT OF THE SWITCH. LOTS OF PORTS TO PLUG IN

02:13:35 25   CONNECTIONS TO COMPUTERS.

02:13:40 1   IN THE BACK YOU SEE A WHOLE WALL OF FANS, THESE THINGS PUT

02:13:45 2   OUT A LOT OF AIR BECAUSE THAT'S REQUIRED TO COOL THE SWITCH.

02:13:50 3   THE OTHER DESIGNS PUT THE FANS ON THE SIDES.

02:13:53 4   THE PROBLEMS WITH FANS ON THE SIDES IS THEY DON'T COOL FUN

02:13:56 5   FORMALLY ACROSS THE SWITCH, WHICH THEN MEANS THAT SOME PORTS

02:13:59 6   WIND UP TOO HOT WHILE OTHERS HAVE MORE COOLING THAN THEY NEED.

02:14:04 7   WHAT ENABLES YOU TO PULL THE AIR THROUGH THE SWITCH THIS

02:14:06 8   WAY IS THAT IN PREVIOUS DESIGNS, PACKETS THAT COME IN ONE LINE

02:14:10 9   CARD HAVE TO TRAVEL ACROSS A BACK FAN TO GET DOWN TO ANOTHER

02:14:14 10   LINE CARD.

02:14:16 11   THAT BACK FAN BLOCKS THE AIRFLOW, AND YOU CAN'T JUST PUNCH

02:14:19 12   HOLES IN IT BECAUSE YOU NEED EVERY WIRE YOU CAN GET TO CARRY

02:14:23 13   THE PACKETS.

02:14:24 14   THIS SWITCH HAS NO BACK FAN. INSTEAD, EACH OF THESE UNITS

02:14:29 15   HERE IS A FABRIC CARD, IT'S A VERTICALLY MOUNTED CARD

02:14:35 16   CONNECTING WITH THE HORIZONTALLY MOUNTED LINE CARD IN THE

02:14:38 17   MIDDLE OF THE SWITCH.

02:14:38 18   THE PACKETS COME IN THE LINE CARD, GO THROUGH THE MIDDLE

02:14:52 19   OF THE SWITCH, ENTER A FABRIC CARD, TRAVEL ALONG THE FABRIC

02:14:54 20   CARD, GO BACK THROUGH THE MIDDLE OF THE SWITCH, AND OUT THE

02:14:58 21   LINE CARD.

02:14:59 22   REMEMBER THESE FABRIC CARDS ARE MOUNTED IN LIKE SO, SO

02:15:03 23   THAT THE AIR CAN FLOW RIGHT THROUGH THE MIDDLE OF THE SWITCH,

02:15:06 24   FIRST PASSING OVER ALL LINE CARDS, THEN PASSING BETWEEN ALL THE

02:15:10 25   FABRIC CARDS BEING BLOWN OUT THE BACK.

02:15:13 1   I HAD NEVER SEEN ANYTHING LIKE THIS BEFORE.

02:15:15 2   Q.   I WILL TAKE THAT FROM. THANK YOU, MR. DUDA.

02:15:20 3   WHAT YOU'VE DESCRIBED, WAS THAT THE ONLY NEW IDEA IN THIS

02:15:24 4   SWITCH?

02:15:24 5   A.   NO. WE HAD IDEAS FOR THE SOFTWARE AS WELL.

02:15:30 6   Q.   AND WHAT WAS YOUR MAIN ROLE WITH RESPECT TO THE NEW SWITCH

02:15:34 7   THAT ARISTA WAS DESIGNING?

02:15:35 8   A.   I WAS RESPONSIBLE FOR THE SOFTWARE, THE SOFTWARE

02:15:38 9   ARCHITECTURE AND GETTING THE SOFTWARE BUILT.

02:15:40 10   Q.   AND WHAT DID THAT ENTAIL?

02:15:44 11   A.   IT MEANT PLANNING HOW -- DESIGNING THE SWITCH SOFTWARE,

02:15:48 12   FIGURING OUT HOW TO CONSTRUCT THE SOFTWARE TO SUPPORT THE NEEDS

02:15:51 13   OF OUR TARGET CUSTOMERS WHICH WERE THE CLOUD CUSTOMERS.

02:15:55 14   Q.   AND HOW LONG DID IT TAKE ARISTA TO BUILD THE SWITCH THAT

02:16:00 15   MR. BECHTOLSHEIM HAD ENVISIONED BACK IN THAT MEETING AFTER YOU

02:16:04 16   KILLED THE VPN PRODUCT?

02:16:06 17   A.   IT TOOK NEARLY FIVE YEARS. WE DIDN'T DELIVER ANDY'S

02:16:10 18   VISION UNTIL 2010.

02:16:11 19   Q.   AND WHY DID IT TAKE THAT LONG?

02:16:13 20   A.   SWITCHES ARE COMPLICATED. THERE ARE SO MANY PIECES TO GET

02:16:17 21   RIGHT, SO MUCH THE SOFTWARE HAS TO DO TO MANAGE THE LINE CARDS

02:16:21 22   AND THE FABRIC CARDS TO CONFIGURE THE FABRIC, TO ESTABLISH

02:16:26 23   NETWORK CONNECTIONS WITH ADJACENT DEVICES, AND TO PROVIDE

02:16:29 24   VISIBILITY TO THE CUSTOMER TO MANAGE THE NETWORK. IT'S JUST A

02:16:33 25   LOT OF WORK.

02:16:34   1   Q.   OKAY. AND HOW MUCH HAS ARISTA SPENT ON RESEARCH AND

02:16:38   2   DEVELOPMENT FROM THE TIME THAT IT WAS FOUNDED THROUGH TODAY?

02:16:42   3   A.   WE'VE SPENT MORE THAN $750 MILLION ON RESEARCH AND

02:16:47   4   DEVELOPMENT.

02:16:48   5   Q.   I WANT TO ASK YOU ABOUT THE DESIGN OF ARISTA SWITCHES. IS

02:16:54   6   THERE SOME OVERARCHING FEATURE THAT DISTINGUISHES THE DESIGN OF

02:17:00   7   ARISTA SWITCHES?

02:17:01   8   A.   WHAT'S MOST UNIQUE ABOUT OUR SWITCHES IS THE WAY WE BUILT

02:17:05   9   THEM FROM THE GROUND UP TO TARGET THE CLOUD NETWORKING MARKET,

02:17:08   10   THE NETWORKING FOR CLOUD COMPUTING.

02:17:10   11   Q.   AND WOULD YOU PLEASE JUST EXPLAIN FOR THE JURY WHEN YOU

02:17:14   12   SAY "CLOUD NETWORKING," WHAT DO YOU MEAN BY THAT?

02:17:17   13   A.   SURE. TRADITIONALLY, NETWORKING COMPANIES HAVE FOCUSED ON

02:17:21   14   ENTERPRISES WHICH ARE BIG COMPANIES LIKE BIG BANKS AND

02:17:25   15   INSURANCE COMPANIES THAT USE NETWORKS IN THEIR INTERNAL

02:17:27   16   OPERATIONS. BUT WHAT ARISTA SAW WAS COMING WAS THE RISE OF THE

02:17:32   17   BIG CLOUD COMPANIES, COMPANIES THAT RUN MASSIVE DATA CENTERS TO

02:17:37   18   SUPPORT NEW APPLICATIONS LIKE WEB SEARCH TO MILLIONS OF

02:17:40   19   MILLIONS OF PEOPLE.

02:17:41   20   Q.   AND WHY DOES -- WHY DO CLOUD NETWORKS NEED THEIR OWN KIND

02:17:47   21   OF ETHERNET SWITCH?

02:17:49   22   A.   YEAH. THERE ARE THREE BIG REASONS FOR THAT.

02:17:52   23   ONE IS THAT THE CLOUD NETWORKS REQUIRE A LOT OF EAST, WEST

02:17:58   24   BANDWIDTH BY WHICH WE MEAN BANDWIDTH FROM ONE SERVER TO ANOTHER

02:18:04   25   IN THE DATA CENTER.

02:18:06 1   THE SECOND REASON IS WHEN YOU ARE AT THAT KIND OF SCALE

02:18:08 2 BUILDING NETWORKS THAT LARGE, YOU NEED BETTER WAYS TO AUTOMATE.

02:18:12 3   AND THE THIRD REASON IS PROGRAMMABILITY. OUR CLOUD

02:18:15 4 CUSTOMERS BENEFIT FROM BEING ABLE TO ADD THEIR OWN SOFTWARE TO

02:18:18 5 OUR SWITCHES, WHICH IS SOMETHING NO OTHER SWITCHES AT THE TIME

02:18:21 6 ALLOWED.

02:18:22 7 Q.   I WANT TO ASK YOU TO EXPLAIN EACH OF THOSE, AGAIN BRIEFLY.

02:18:28 8 BUT YOU REFER TO EAST WEST BANDWIDTH. WHAT DO YOU MEAN BY

02:18:33 9 THAT?

02:18:33 10 A.   EAST WEST BANDWIDTH REFERS TO COMMUNICATION DIRECTLY

02:18:36 11 BETWEEN SERVERS IN A DATA CENTER. IF YOU THINK ABOUT OLD STYLE

02:18:45 12 NETWORKS, YOU CHECK YOUR BALANCE AT AN ATM MACHINE. WELL, THE

02:18:45 13 ATM MACHINE SENDS THE MESSAGE TO A SERVER, THE SERVER RESPONDS

02:18:50 14 WITH THE BALANCE. THERE'S NOT VERY MUCH BANDWIDTH REQUIRED.

02:18:53 15   BUT WHEN YOU SEARCH THE WEB, YOU SEND THAT SMALL SEARCH

02:18:58 16 REQUEST TO THE WEB SEARCH SERVER. AND THE AMOUNT OF INTERNAL

02:19:01 17 COMMUNICATION REQUIRED TO SEARCH THE WHOLE WEB AND RETURN THOSE

02:19:03 18 RESULTS RANKED BY IMPORTANCE WITH THE ADVERTISEMENTS INSERTED,

02:19:07 19 THERE'S A HUGE AMOUNT OF SERVER-TO-SERVER COMMUNICATION

02:19:10 20 REQUIRED TO THEN PROVIDE A FAIRLY SMALL RESPONSE BACK TO YOU.

02:19:14 21   AND OUR NETWORKS EXCEL AT PROVIDING THAT KIND OF

02:19:18 22 SERVER-TO-SERVER CONNECTIVITY.

02:19:20 23 Q.   OKAY. YOU ALSO REFER TO THE SCALE OF CLOUD NETWORKS AND

02:19:24 24 THE NEED TO AUTOMATE. WHAT DID YOU MEAN BY THAT?

02:19:27 25 A.   TRADITIONAL ENTERPRISES BUILD SMALL SCALE DEPLOYMENT OF

02:19:33 1   SPECIFIC APPLICATIONS. ORACLE DEPLOYMENT, PEOPLESOFT

02:19:38 2   DEPLOYMENT, EACH WITH A SMALL AMOUNT OF NETWORKING AND

02:19:42 3   COMPUTERS AND STORAGE HARDWARE.

02:19:43 4   TO SCALE UP APPLICATIONS TO SUPPORT MILLIONS OF USERS,

02:19:45 5   CLOUD CUSTOMERS BUILD VERY LARGE REGULAR NETWORKS, THE SAME

02:19:51 6   STRUCTURE STAMPED OUT OVER AND OVER AND OVER AGAIN.

02:19:53 7   AND THEN AT THAT SCALE, THEY NEED TO AUTOMATE THE

02:19:57 8   OPERATION OF THOSE NETWORKS. YOU CAN'T JUST HAVE A PERSON

02:20:00 9   CONFIGURE 10,000 SWITCHES. YOU NEED TO GET COMPUTERS TO DO THE

02:20:04 10   WORK OF MANAGING THE NETWORK AS WELL, WHICH MEANS THE SWITCHES

02:20:08 11   HAVE TO BE AMENABLE TO THAT SORT OF AUTOMATION.

02:20:11 12   Q.   OKAY. AND THE THIRD POINT YOU MENTIONED WAS

02:20:13 13   PROGRAMMABILITY. WHAT DID YOU MEAN BY PROGRAMMABILITY IN THIS

02:20:17 14   CONTEXT?

02:20:17 15   A.   PROGRAMMABILITY MEANS OUR CUSTOMERS CAN ADD THEIR OWN

02:20:21 16   SOFTWARE TO OUR SWITCHES, WHICH THEY USE TO CONTROL THE TRAFFIC

02:20:26 17   THROUGH THEIR NETWORKS WITH A GREATER DEGREE OF PRECISION THAN

02:20:30 18   IS POSSIBLE WITH STANDARD NETWORK CONTROL PLANE FUNCTIONS.

02:20:35 19   Q.   OKAY. AND WHAT ROLE DO SWITCHES SPECIFICALLY PLAY IN A

02:20:40 20   CLOUD NETWORK?

02:20:41 21   A.   THE SERVERS SIT IN SERVER RACKS, BIG STACKS OF SERVERS,

02:20:47 22   RACK, AFTER RACK, ROW AFTER ROW. AT THE TOP OF EACH RACK

02:20:50 23   TYPICALLY IS A NETWORK SWITCH WITH A CABLE TO EACH SERVER IN

02:20:54 24   THE RACK.

02:20:55 25   AND THEN FIBER OPTIC LINKS TO AGGREGATION SWITCHES SO THAT

02:21:00 1   COMPUTER COMMUNICATION TRAVELS FROM ONE SERVER TO THE TOP OF

02:21:04 2   RACK SWITCH TO THE AGGREGATION SWITCH, AND THEN TO ANOTHER RACK

02:21:08 3   OR POTENTIALLY ANOTHER DATA CENTER.

02:21:10 4   Q.   OKAY. I WANT TO ASK YOU ABOUT SOME OF THE FEATURES OF

02:21:16 5   ARISTA SWITCHES, IN PARTICULAR. BUT BEFORE I DO THAT, IS THERE

02:21:20 6   ONE PARTICULAR FEATURE THAT MAKES ARISTA'S SWITCHES OPTIMIZED

02:21:26 7   FOR CLOUD NETWORKS?

02:21:29 8   A.   WELL, I THINK OUR STATE ORIENTED -- OUR STATE SHARING

02:21:33 9   ARCHITECTURE IN THE SOFTWARE IS VERY IMPORTANT FOR THE

02:21:36 10   STRUCTURE OF OUR SWITCHES.

02:21:37 11   Q.   OKAY. AND WE WILL TALK ABOUT THAT. AND DOES THE

02:21:42 12   IMPLEMENTATION OF THE FEATURES THAT YOU DESCRIBED IN SOFTWARE

02:21:46 13   HAVE AN EFFECT ON THE SUCCESS OF THOSE FEATURES?

02:21:50 14   A.   ABSOLUTELY. WHEN YOU ARE IMPLEMENTING FEATURES, YOU MAKE

02:21:56 15   LOTS OF INDIVIDUAL DESIGN DECISIONS ABOUT THE DETAILS OF HOW

02:22:00 16   THE FEATURES WORK AND FIT TOGETHER WITH FEATURES.

02:22:03 17   GETTING THOSE DETAILS RIGHT IS REALLY IMPORTANT FOR A

02:22:05 18   SMOOTH FUNCTIONING WORK.

02:22:07 19   Q.   WHAT ABOUT THE COMBINATION OF FEATURES, DOES THAT HAVE AN

02:22:10 20   AFFECT ON THE ULTIMATE USEFULNESS OF THE SWITCH?

02:22:12 21   A.   ABSOLUTELY. TAKING JUST ONE OR TWO OF THESE INNOVATIONS

02:22:17 22   BY ITSELF DOESN'T FUNDAMENTALLY CHANGE THE WAY CLOUD NETWORKS

02:22:21 23   OPERATORS CAN OPERATE THEIR NETWORKS, IT'S THE COMBINATION OF

02:22:24 24   THESE FEATURES THAT'S BEEN SO POTENT IN THE MARKETPLACE.

02:22:27 25   Q.   OKAY. THANK YOU.

02:22:27   1   AND NOW YOU MENTIONED STATE SHARING ARCHITECTURE, I'M

02:22:32   2   CERTAINLY GOING TO ASK YOU TO EXPLAIN THAT. BUT WHY DON'T WE

02:22:36   3   DO IT IN PIECES.

02:22:38   4   AND SO FIRST OF ALL, WHAT WAS THE OLD WAY OF DOING IT THAT

02:22:43   5   ARISTA DECIDED TO DO SOMETHING DIFFERENT FROM?

02:22:45   6   A.   WELL, ORIGINALLY PEOPLE CONSTRUCTED MONOLITHIC STRUCTURES.

02:22:51   7   MONOLITHIC SWITCH OPERATING SYSTEMS, MEANING THE SWITCH

02:22:56   8   OPERATING SYSTEM IS JUST ONE BIG PROGRAM. THESE WERE VERY

02:22:59   9   ERROR PRONE. THE SMALLEST PROBLEM IN THE SOFTWARE CAUSED THE

02:23:02 10   WHOLE SWITCH TO CRASH.

02:23:04 11   SO THEN IN THE SECOND GENERATION SYSTEMS, PEOPLE DIVIDED

02:23:08 12   THE SOFTWARE UP INTO SEPARATE PROCESSES THAT COORDINATE BY

02:23:11 13   SENDING MESSAGES TO EACH OTHER, BUT THESE MESSAGE PASSING

02:23:14 14   SYSTEMS NEVER WORKED AS WELL AS PEOPLE HOPED.

02:23:17 15   Q.   AND WHAT WAS THE PROBLEM WITH THE MESSAGE PASSING SYSTEMS?

02:23:20 16   A.   WELL, MESSAGE PASSING SYSTEM HAS TWO MAIN PROBLEMS.

02:23:24 17   ONE IN RESTART ABILITY, AND ONE IN THE RATE MISMATCH. THE

02:23:29 18   DEADLY ONE IS THE RATE MISMATCH PROBLEM, WHICH IS WHEN ONE

02:23:33 19   PROCESS SENDS MESSAGES FASTER THAN THE RECIPIENT CAN HANDLE

02:23:37 20   THEM, A CUE BUILDS UP OF UNPROCESSED MESSAGES, IT GETS BIGGER

02:23:41 21   AND BIGGER.

02:23:42 22   THE BIGGER IT GETS, THE MORE WONKY THE SYSTEM BEHAVES

02:23:46 23   BECAUSE ONE PART IS RUNNING BEHIND ANOTHER PART.

02:23:48 24   IT CAN ONLY GET SO BIG. AT SOME POINT YOU RUN OUT OF

02:23:52 25   MEMORY AND THEN THE SWITCH CRASHES AND THAT'S THE LEVEL OF

02:23:56 1   RELIABILITY THAT WE NEEDED TO DO BETTER.

02:23:58 2   Q.   OKAY.   AND WOULD YOU PLEASE EXPLAIN WHAT ARISTA DID WITH

02:24:05 3   RESPECT TO STATE SHARING ARCHITECTURE, AND WE HAVE AN EASEL IF

02:24:10 4   IT WILL HELP YOU.   WITH THE COURT'S PERMISSION, YOU CAN COME TO

02:24:12 5   THE EASEL AND DRAW A DIAGRAM.

02:24:24 6   A.   WHEN YOU ARE DIVIDING A SWITCH OPERATING SYSTEM UP INTO

02:24:34 7   PROCESSES, WHAT WE DO IN ARISTA'S SOFTWARE, IS WE CREATE A

02:24:41 8   DATABASE PROCESS IN THE MIDDLE.

02:24:43 9   THE DATABASE PROCESS'S JOB IS TO HOLD ALL OF THE STATE OF

02:24:47 10   THE SWITCH.   WHICH LINKS ARE UP, WHICH LINKS ARE DOWN, HOW HAS

02:24:52 11   THE SWITCH BEEN CONFIGURED, HOW MANY PACKETS HAVE BEEN RECEIVED

02:24:56 12   ON WHICH PORTS, INFORMATION ABOUT THE SWITCH'S NEIGHBORS IN THE

02:24:59 13   NETWORK AND WHAT ROUTES TO USE FOR WHAT TYPE OF TRAFFIC.

02:25:02 14   ALL OF THAT IS STORED IN THE SYSTEM DATABASE.

02:25:07 15   FOR EXAMPLE, IF WE HAVE ONE PROCESS TO MANAGE THE SWITCH'S

02:25:14 16   HARDWARE, AND ANOTHER PROCESS WHOSE JOB IS TO KEEP ALL OF THE

02:25:24 17   LINK STATUS INDICATORS, THE LITTLE STATUS LIGHTS ON THE FRONT

02:25:27 18   OF THE SWITCH, KEEP THEM THE RIGHT COLOR.

02:25:30 19   THEN WHEN WE DETECT THAT A LINK GOES DOWN HERE, WE WRITE

02:25:36 20   STATE INTO THE SYSTEM DATABASE SAYING THE LINK IS NOW DOWN.

02:25:42 21   THAT STATE UPDATE PROPAGATES TO ALL OF THE OTHER PROCESSES THAT

02:25:46 22   CARE ABOUT LINK STATUS, WHICH MOST DO, AND OUR LED AGENT, FOR

02:25:52 23   EXAMPLE, TURNS OFF THE LINK.

02:25:57 24   THIS MEANS THAT IF ONE OF THESE PROCESSES HAS A PROBLEM,

02:26:00 25   AND EXITS AND RESTARTS, IT CAN RECOVER ITS STATE FROM THE

02:26:04 1   SYSTEM DATABASE.

02:26:05 2   THE OTHER PROCESSES DON'T NEED TO KNOW THAT ANYTHING

02:26:08 3   HAPPENED, BECAUSE TO THEM, IT JUST LOOKS LIKE THE STATE

02:26:12 4   DATABASE IS BEING UPDATED A LITTLE MORE SLOWLY THAN YOU RECALL,

02:26:15 5   SO IT SOLVES THE PROBLEM OF COORDINATING THESE PROCESSES

02:26:20 6   WITHOUT INTRODUCING THE PROBLEMS OF MESSAGE PASSING.

02:26:23 7   Q.   THANK YOU, MR. DUDA. YOU MAY RETURN TO THE STAND.

02:26:30 8   WHAT IS THE PRACTICAL RESULT OF THIS ARCHITECTURE THAT

02:26:33 9   YOU'VE DESCRIBED FOR ARISTA'S CUSTOMERS?

02:26:36 10   A.   IT MEANS THAT OUR SWITCHES ARE MORE RELIABLE. IT GIVES --

02:26:41 11   CREATES A FRAMEWORK IN WHICH CUSTOMERS CAN ADD THEIR OWN

02:26:44 12   SOFTWARE, AND IT HELPS US CREATE FEATURES MORE QUICKLY AS WELL.

02:26:47 13   Q.   HOW DOES IT HELP ARISTA CREATE FEATURES MORE QUICKLY?

02:26:53 14   A.   WELL, WHEN YOU'RE ABLE TO CREATE A NEW FEATURE AS A

02:26:58 15   STAND-ALONE PROCESS, YOU CAN DEVELOP YOUR FEATURE IN ISOLATION

02:27:01 16   WITHOUT WORRYING ABOUT THE REST OF THE SOFTWARE ON THE DEVICE.

02:27:05 17   AND IT ALSO CREATES A BETTER WAY TO TEST YOUR FEATURE. YOU CAN

02:27:08 18   TEST THAT ONE FEATURE IN ISOLATION OF ALL THE OTHER PROCESSES

02:27:12 19   ON THE DEVICE.

02:27:14 20   IN THE ALTERNATIVE, IF YOUR FEATURE IS PART OF A LARGE

02:27:16 21   PROGRAM, THEN YOU NEED TO COMPILE THAT LARGE PROGRAM AND

02:27:21 22   DOWNLOAD IT ON TO A SWITCH, IT'S MUCH MORE CUMBERSOME.

02:27:24 23   Q.   I SEE. AND HOW DOES THAT -- WHAT DOES THAT HELP ARISTA

02:27:29 24   DO?

02:27:30 25   A.   WELL, IT HELPS US DELIVER MORE FEATURES MORE QUICKLY TO

02:27:35 1   OUR CUSTOMERS WHICH HELPS US ADDRESS MORE OF THEIR USE CASES

02:27:39 2   AND THEIR NEEDS FOR NETWORK DEVICES.

02:27:41 3   Q.   OKAY. I WANT TO ASK YOU ABOUT A DIFFERENT TOPIC NOW.

02:27:44 4   DOES ARISTA'S EOS USE SOMETHING CALLED LINUX?

02:27:48 5   A.   YES.

02:27:48 6   Q.   AND WHAT IS LINUX?

02:27:51 7   A.   LINUX IS AN OPEN SOURCE SERVER OPERATING SYSTEM WIDELY

02:27:55 8   USED BY CLOUD COMPUTING COMPANIES.

02:27:58 9   Q.   AND WHAT IS AN OPERATING SYSTEM?

02:27:59 10   A.   AN OPERATING SYSTEM IS THE LOWEST LEVEL SOFTWARE ON A

02:28:04 11   COMPUTER THAT MANAGES THE MOST BASIC FUNCTIONS OF THE COMPUTER.

02:28:08 12   ITS PROCESSOR, ITS MEMORY, AND ITS INPUT, OUTPUT DEVICES.

02:28:13 13   Q.   ISN'T EOS ITSELF AN OPERATING SYSTEM?

02:28:16 14   A.   EOS IS A NETWORK OPERATING SYSTEM THAT PERFORMS THOSE

02:28:20 15   BASIC FUNCTIONS. BUT IN ADDITION, IT COMMUNICATES WITH OTHER

02:28:28 16   THE DEVICES ON THE NETWORK AND ESTABLISHES COMMUNICATION PATHS

02:28:31 17   THROUGH THE NETWORK.

02:28:31 18   Q.   SO HOW DOES ARISTA USE LINUX IN ITS EOS OPERATING SYSTEM?

02:28:35 19   A.   EOS INCORPORATES LINUX. WE BUILD ON LINUX AS THE

02:28:40 20   FOUNDATION. LINUX MANAGES THE BASIC SYSTEM HARDWARE AND THEN

02:28:43 21   THE SOFTWARE WE ADD MANAGES THE NETWORKING RELATED FUNCTIONS.

02:28:50 22   Q.   OKAY. AND HOW IS THAT DESIGN DIFFERENT FROM THE

02:28:56 23   TRADITIONAL SWITCH OPERATING SYSTEM DESIGNS?

02:28:58 24   A.   FIRST GENERATION OF SWITCH OPERATING SYSTEMS WERE

02:29:01 25   MONOLITHIC, ONE BIG PROGRAM WITH NO OPERATING SYSTEM KERNEL AT

02:29:05 1   ALL. AND THESE PROVED TO BE VERY ERROR PRONE, AS I MENTIONED.

02:29:08 2   SECOND GENERATION OPERATING SYSTEMS WERE BASED ON SOME

02:29:11 3   KIND OF AN OPERATING SYSTEM KERNEL, BUT KEPT IT CLOSED. KERNEL

02:29:18 4   WAS TYPICALLY PROPRIETARY AND THEY DIDN'T ALLOW ANY THIRD PARTY

02:29:22 5   SOFTWARE TO BE INSTALLED INTO THE SWITCH ENVIRONMENT.

02:29:25 6   Q.   WERE YOU PERSONALLY INVOLVED IN THE DECISION TO USE LINUX

02:29:29 7   IN EOS?

02:29:30 8   A.   YES.

02:29:31 9   Q.   AND AT THE TIME THAT YOU MADE THAT DECISION, WERE THERE

02:29:34 10   OTHER ETHERNET SWITCH VENDORS WHO ALSO BASED THEIR SWITCH

02:29:39 11   OPERATING SYSTEM ON LINUX?

02:29:40 12   A.   NONE THAT WE KNEW OF AT THAT TIME.

02:29:43 13   Q.   TO YOUR KNOWLEDGE, IS THERE ANY SWITCH VENDOR TODAY WHO

02:29:47 14   IMPLEMENTS LINUX IN THEIR OPERATING SYSTEM THE WAY THAT ARISTA

02:29:50 15   DOES?

02:29:51 16   A.   I THINK THERE ARE OTHERS THAT USE LINUX IN SOME FORM, BUT

02:29:55 17   THEY HAVEN'T INCORPORATED IT IN THE SAME WAY WE HAVE AND

02:29:59 18   EXPOSED IT TO CUSTOMERS THE SAME WAY WE HAVE.

02:30:01 19   Q.   AND PLEASE EXPLAIN WHAT YOU MEAN BY THAT TO THE JURY?

02:30:05 20   A.   WELL, ONE OF THE KEY DECISIONS WE MADE EARLY ON WAS TO

02:30:10 21   OPEN OUR OPERATING SYSTEM, TO MAKE IT ACCESSIBLE TO OUR

02:30:13 22   CUSTOMERS, TO ENABLE OUR CUSTOMERS TO ADD THEIR OWN SOFTWARE TO

02:30:17 23   THE PRODUCT. AND AS FAR AS I KNOW, WE ARE THE ONLY COMPANY

02:30:19 24   THAT DOES THAT TODAY.

02:30:20 25   Q.   AND WHAT DIFFERENCE DOES THAT MAKE FOR ARISTA'S CUSTOMERS?

02:30:24 1   A.   WELL, FOR MOST TRADITIONAL ENTERPRISE CUSTOMERS, NO

02:30:27 2   DIFFERENCE AT ALL.   THE BIG BANKS AND INSURANCE COMPANIES HAVE

02:30:31 3   NO INTEREST IN CREATING THEIR OWN SOFTWARE FOR NETWORK

02:30:34 4   SWITCHES.

02:30:35 5   BUT AGAIN, THE CLOUD CUSTOMERS, WHO HAVE A LOT OF

02:30:38 6   PROGRAMMERS ON STAFF, ARE ABLE TO TAKE ADVANTAGE OF THE

02:30:43 7   PROGRAMMABILITY OF OUR PLATFORM, THE EXTENSIBILITY AFFORDED BY

02:30:48 8   KEEPING THE LINUX ENVIRONMENT OPEN AND ADD THEIR OWN SOFTWARE

02:30:51 9   THAT ENHANCES THE WAY THEIR NETWORK WORKS.

02:30:54 10   Q.   DOES USING LINUX ALSO HELP ARISTA DEVELOP NEW FEATURES?

02:30:58 11   A.   YES, IT DOES.

02:30:59 12   Q.   IN WHAT WAY?

02:31:01 13   A.   OUR INTERNAL SERVERS RUN LINUX AS WELL.   THE SAME LINUX

02:31:05 14   VARIANT RUNNING ON OUR SWITCHES.   THAT ENABLES OUR ENGINEERS TO

02:31:09 15   DEVELOP SOFTWARE MORE EFFICIENTLY BECAUSE THEY DON'T NEED TO

02:31:14 16   COMPILE A LARGE IMAGE AND PUT IT ON TO A SWITCH.

02:31:18 17   Q.   AND CAN YOU EXPLAIN THAT A LITTLE FURTHER, WHAT'S THE

02:31:21 18   DIFFERENCE BETWEEN DEVELOPING SOFTWARE IN A LINUX ENVIRONMENT

02:31:24 19   FOR A LINUX SWITCH VERSUS DEVELOPING IT IN SOME OTHER

02:31:27 20   ENVIRONMENT?

02:31:28 21   A.   RIGHT.   THE ADVANTAGE IS AS AN ENGINEER, THE TRADITIONAL

02:31:34 22   PROCESS, YOU ARE MAYBE CHANGING 50, 100, 200 LINES OF CODE.

02:31:40 23   YOU MAKE YOUR CHANGES.   YOU HAVE TO COMPILE THE ENTIRE

02:31:44 24   OPERATING SYSTEM IN ORDER TO LOAD IT ON TO A SWITCH WHICH CAN

02:31:47 25   TAKE SEVERAL MINUTES TO SEE ANY EFFECT OF YOUR CHANGE.

02:31:50 1   AND IF YOU MADE A SMALL MISTAKE, YOU HAVE TO REPEAT THE

02:31:53 2   PROCESS AGAIN AND YOU REALLY GET SLOWED DOWN.

02:31:56 3   WHEREAS IN A LINUX ENVIRONMENT, AT ARISTA, OUR ENGINEERS

02:32:00 4   CAN MAKE THE CHANGES ON THEIR OWN DEVELOPMENT SERVER. AND THEN

02:32:05 5   COMPILE JUST THE PART THEY ARE WORKING ON AND RUN JUST THAT

02:32:08 6   PART RIGHT THERE ON THAT SAME SERVER.

02:32:11 7   AND I KNOW IT DOESN'T SOUND LIKE MUCH, BUT IT CAN SAVE A

02:32:14 8   TREMENDOUS AMOUNT OF TIME.

02:32:16 9   Q.   OKAY. YOU MENTIONED PROGRAMMABILITY SOME, AND I WANT TO

02:32:23 10   TALK TO YOU ABOUT THAT.

02:32:25 11   FIRST OF ALL, WE HAVE BEEN TALKING ABOUT EOS. WHAT DOES

02:32:28 12   THE E STAND FOR IN EOS?

02:32:30 13   A.   E STANDS FOR EXTENSIBLE.

02:32:32 14   Q.   OKAY. AND IN WHAT WAY IS EOS EXTENSIBLE?

02:32:39 15   A.   IT'S EXTENSIBLE IN THE WAY THAT WE ALLOW OUR CUSTOMERS TO

02:32:45 16   ADD SOFTWARE TO OUR SWITCHES.

02:32:47 17   AND I STILL REMEMBER THE AFTERNOON I WAS WALKING DOWN THE

02:32:51 18   STAIRS FROM OUR FIRST DEVELOPMENT OFFICE, WHICH WAS OUT MY

02:32:54 19   BEDROOM DOOR DOWN THE HALL TO THE LEFT, AND WE REALIZED IT

02:32:58 20   WOULD BE SO MUCH EASIER TO ADD SOFTWARE TO OUR SWITCH THAN ANY

02:33:00 21   SWITCH PRODUCT WE HAD SEEN BEFORE. WHY SHOULD WE BE THE ONLY

02:33:03 22   ONES DOING THIS, WHY NOT LEAVE IT OPEN TO ALL SORTS OF

02:33:08 23   DEVELOPERS.

02:33:08 24   Q.   BUT WHY WOULD AN ARISTA CUSTOMER WANT TO ADD THEIR OWN

02:33:12 25   SOFTWARE TO AN ARISTA SWITCH?

02:33:13 1   A.   WELL, IT'S A LITTLE BIT LIKE THE ORIGINAL IPHONE WAS

02:33:18 2   ACTUALLY A CLOSED SYSTEM. MAYBE MOST PEOPLE DON'T REMEMBER

02:33:21 3   THIS, BUT ORIGINALLY ALL IOS APPS CAME FROM APPLE. AND ONLY

02:33:27 4   LATER DID APPLE DECIDE TO OPEN UP THE IPHONE TO THIRD PARTY

02:33:32 5   DEVELOPMENT AND THE APP STORE.

02:33:33 6   AND YOU CAN SEE HOW THAT CHANGED THE WORLD WITH ALL THE

02:33:36 7   FUNCTIONS AND THE HUNDREDS OF THOUSANDS OF APPS THAT ARE NOW

02:33:40 8   AVAILABLE.

02:33:40 9   Q.   AND IN THE CASE OF A NETWORK, AND SPECIFICALLY A CLOUD

02:33:45 10 NETWORK, WHAT WOULD A CUSTOMER WANT TO DO WITH AN APP THAT THE

02:33:48 11 CUSTOMER -- OR APPLICATION THAT THE CUSTOMER MIGHT WRITE AND

02:33:52 12 PUT ON TO AN ARISTA SWITCH?

02:33:53 13 A.   THE CUSTOMER GAINS BETTER CONTROL OVER HOW THE SWITCH

02:33:57 14 WORKS. AND THIS IS VERY IMPORTANT FOR DELIVERING THE BEST

02:34:03 15 SERVICE TO THEIR END USERS, THEY NEED TO CONTROL THE FLOWS OF

02:34:07 16 PACKET TRAFFIC, WHICH TUNNELS AND PATHS THEY TAKE BETWEEN THE

02:34:12 17 DATA CENTERS OF THE CLOUD OPERATOR, BUT ALSO, THEY NEED TO

02:34:15 18 CONTROL HOW THE TRAFFIC MAKES IT FROM THE CLOUD OPERATOR'S DATA

02:34:19 19 CENTER TO THE CARRIER'S HANDOFF POINT, WHETHER THAT'S AT&T OR

02:34:24 20 VERIZON OR COMCAST OR TIME WARNER, AND BY PUTTING THEIR OWN

02:34:28 21 SOFTWARE ON OUR SWITCHES, THEY CAN GET THAT CONTROL.

02:34:31 22 Q.   AND WHY IS IT THAT THEY NEED TO CONTROL THOSE PATHS?

02:34:36 23 A.   TO PROVIDE THE BEST QUALITY EXPERIENCE FOR THEIR END

02:34:39 24 CUSTOMER.

02:34:39 25   STANDARD ROUTING ELEMENTS DON'T NECESSARILY PICK THE VERY

DUDA DIRECT EXAMINATION BY MR. SILBERT

02:34:43 1   FASTEST PATH TO GET THAT WEB RESPONSE FROM THE CLOUD SERVER TO

02:34:50 2   THE END CUSTOMER. THEY MAKE DECISIONS THAT ARE BASED ON THE

02:34:56 3   COMPANY BOUNDARIES, ADMINISTRATIVE BOUNDARIES, PROPERTIES OF

02:34:58 4   THE NETWORK THAT DON'T REALLY MATTER FOR PERFORMANCE.

02:35:02 5   BY REPLACING THE STANDARD ALGORITHMS WITH THE CLOUD

02:35:05 6   PROVIDER'S CUSTOMIZED ALGORITHM, THEY CAN PROVIDE BETTER

02:35:09 7   QUALITY OF SERVICE.

02:35:09 8   Q.   AND CAN YOU EXPLAIN HOW IS IT THAT ARISTA'S SWITCHES ALLOW

02:35:15 9   CLOUD NETWORK OPERATORS TO GAIN THAT CONTROL?

02:35:18 10   A.   WE LEFT THEM OPEN. AN OPERATOR CAN LOG INTO OUR SWITCH

02:35:24 11   AND INSTALL THEIR OWN SOFTWARE. WE PROVIDE A SOFTWARE

02:35:28 12   DEVELOPMENT KIT SO THAT THE CLOUD OPERATOR CAN CREATE THEIR OWN

02:35:31 13   SOFTWARE, TEST IT IN THEIR OWN ENVIRONMENT, AND THEN DEPLOY IT

02:35:35 14   ON TO OUR SWITCHES.

02:35:36 15   Q.   AND WHAT ULTIMATE BENEFIT DOES THAT PROVIDE TO THE

02:35:39 16   CUSTOMER?

02:35:39 17   A.   IT GIVES THEM THAT CONTROL OVER THE WAY THEIR NETWORK

02:35:43 18   OPERATES. OPERATING A SCALE OF THEIR APP, THAT CONTROL IS VERY

02:35:47 19   IMPORTANT.

02:35:48 20   Q.   DOES ARISTA ALSO USE A FEATURE CALLED EAPI?

02:35:53 21   A.   YES.

02:35:53 22   Q.   AND WHAT IS EAPI?

02:35:56 23   A.   EAPI IS AN AUTOMATION INTERFACE, SO THAT CUSTOMER SOFTWARE

02:36:02 24   RUNNING OFF THE SWITCH CAN MONITOR AND CONFIGURE THE SWITCH.

02:36:06 25   Q.   WERE YOU PERSONALLY INVOLVED IN DESIGNING EAPI?

02:39:23   1   WE WILL MARK IT, YOUR HONOR, AS DEMONSTRATIVE 9075, AND

02:39:27   2   MR. SILBERT CAN WRITE THAT ON THERE.

02:39:29   3   THE COURT: THANK YOU.

02:39:30   4   (DEFENDANT'S EXHIBIT 9075 WAS MARKED FOR IDENTIFICATION.)

02:39:32   5   **CROSS-EXAMINATION**

02:39:32   6   BY MR. PAK:

02:39:51   7   Q.   GOOD TO SEE YOU AGAIN, MR. DUDA.

02:39:52   8   A.   GOOD TO SEE YOU.

02:39:53   9   Q.   NOW FIRST OF ALL, YOU STILL STAND BY ALL OF THE TESTIMONY

02:39:56   10   THAT YOU HAVE GIVEN IN THIS TRIAL, CORRECT?

02:39:59   11   A.   YES, OF COURSE.

02:40:00   12   Q.   AND YOU STILL STAND BY YOUR TESTIMONY THAT ARISTA COPIED

02:40:04   13   SOME OF CISCO'S CLI COMMANDS FROM CISCO'S SOURCES AND PUT IT

02:40:09   14   INTO ARISTA PRODUCTS, CORRECT?

02:40:10   15   A.   THAT'S RIGHT.

02:40:11   16   Q.   AND YOU STILL STAND BY YOUR TESTIMONY THAT ARISTA DECIDED

02:40:15   17   TO EMBRACE CISCO IOS CLI AS THE MODEL FOR ARISTA'S CLI, TRUE?

02:40:22   18   A.   THAT'S RIGHT.

02:40:23   19   Q.   AND ISN'T IT ALSO TRUE THAT WHEN IT CAME TO COPYING

02:40:27   20   CISCO'S CLI AND PUTTING IT INTO ARISTA SWITCHES, YOU AND OTHERS

02:40:32   21   AT ARISTA MADE THE DECISION NOT TO INNOVATE; ISN'T THAT TRUE?

02:40:35   22   A.   WELL, WE DIDN'T COPY THE WHOLE CLI OR ANYTHING CLOSE. AND

02:40:40   23   WE INNOVATED IN MANY WAYS IN OUR CLI.

02:40:43   24   Q.   ISN'T IT TRUE, SIR, THAT YOU HAVE SAID IN DOCUMENTS, THAT

02:40:48   25   WHEN IT CAME TO COPYING CISCO'S CLI, THERE IS NO NEED TO

02:44:39 1   MR. PAK: THANK YOU, YOUR HONOR.

02:44:40 2   THAT'S ALL I HAVE.

02:44:41 3   THE COURT: ANYTHING ELSE, MR. SILBERT?

02:44:41 4   **REDIRECT EXAMINATION**

02:44:44 5   MR. SILBERT:

02:44:44 6   Q.   VERY BRIEFLY, YOUR HONOR. THANK YOU.

02:44:48 7   MR. DUDA, COULD YOU EXPLAIN WHY YOU SAID WORDS TO THE

02:44:52 8   EFFECT THAT THERE'S NO NEED TO INNOVATE WITH RESPECT TO CLI

02:44:58 9   COMMANDS.

02:44:58 10   A.   SURE. WHAT WE WERE FOCUSED ON THERE IS THE COMMANDS

02:45:01 11   THEMSELVES. THESE ARE COMMANDS THAT ARE COMMON THROUGHOUT THE

02:45:04 12   INDUSTRY, THAT OUR CUSTOMERS PARTICULARLY ON THE ENTERPRISE

02:45:07 13   SIDE, ALREADY KNOW AND ARE FAMILIAR WITH. AND THERE'S NO

02:45:12 14   REASON TO CHANGE THEM JUST FOR THE SAKE OF CHANGING THEM.

02:45:14 15   PEOPLE ARE USED TO THEM.

02:45:16 16   LOTS OF DIFFERENT DEVICES ACCEPT THEM, AND WE SHOULD

02:45:20 17   SIMPLY ACCEPT THE SAME COMMANDS.

02:45:22 18   Q.   REFERRING TO THE TECHNOLOGY OF THE CLI ITSELF, SEPARATE

02:45:26 19   FROM THE COMMANDS, HAS ARISTA INNOVATED IN THAT AREA?

02:45:30 20   A.   WE HAVE SEVERAL INNOVATIONS IN THE CLI. IT'S WRITTEN IN

02:45:33 21   THE LANGUAGE CALLED PYTHON THAT MAKES IT EASIER TO ADD NEW

02:45:41 22   COMMANDS. IT PROVIDES ACCESS TO DIRECT TO UNIX PIPES, GIVES

02:45:44 23   OUR CUSTOMERS MORE WAYS TO PROCESS THE OUTPUT OF COMMANDS.

02:45:45 24   THERE ARE SEVERAL OTHER INNOVATIONS AS WELL.

02:45:50 25   Q.   OKAY. MR. PAK SHOWED YOU EXHIBIT 187, THE E-MAIL FROM

02:47:17   1   Q.   TO YOUR KNOWLEDGE, DOES ANY OTHER ETHERNET SWITCH COMPANY

02:47:23   2   IMPLEMENT A STATE SHARING ARCHITECTURE THE WAY THAT ARISTA

02:47:30   3   DOES?

02:47:30   4   A.   NO.

02:47:31   5   Q.   AND WHY DO YOU SAY THAT?

02:47:33   6   A.   WELL, THERE'S CERTAIN DOCUMENTS THAT DESCRIBE HOW THE IOS

02:47:36   7   XR SYSDB WORKS THAT I'VE LOOKED AT, OBVIOUSLY, AFTER WE BUILT

02:47:40   8   OUR SYSDB. AND IN THOSE DOCUMENTS, THE WAY THEY DESCRIBE THE

02:47:46   9   OPERATION OF SYSDB IS ENTIRELY DIFFERENT FROM THE WAY ARISTA'S

02:47:49   10   SYSDB WORKED, WHICH WE CREATED WITH NO KNOWLEDGE OF THE IOS XR

02:47:55   11   SYSDB.

02:47:56   12   Q.   AND WITHOUT GOING INTO TOO MUCH DETAIL, CAN YOU EXPLAIN

02:47:59   13   WHAT ARE SOME OF THE DIFFERENCES THAT YOU'RE REFERRING TO?

02:48:01   14   A.   ONE PRINCIPAL DIFFERENCE IS THAT IN XR SYSDB, AS I

02:48:08   15   UNDERSTAND IT, IS THERE ARE TRANSACTIONS WHERE A PROCESS THAT

02:48:09   16   WANTS TO READ OR WRITE STATE SENDS A MESSAGE TO THE DATABASE

02:48:13   17   ASKING TO READ OR WRITE THAT STATE, AND THEN WAITS FOR A

02:48:15   18   RESPONSE EITHER CONTAINING THE STATE THAT'S BEEN READ OR

02:48:19   19   CONTAINING AN ACKNOWLEDGEMENT THAT THE RIGHT HAS SUCCEEDED.

02:48:22   20   OUR DATABASE WORKS COMPLETELY DIFFERENTLY. IN OUR

02:48:24   21   DATABASE, A PROCESS STARTS BY INDICATING INTEREST IN A BLOCK OF

02:48:31   22   STATE, AND THEN STREAMS ANY UPDATES TO THAT STATE

02:48:34   23   ASYNCHRONOUSLY. AND SYSDB, MEANWHILE, STREAMS ANY UPDATES THE

02:48:38   24   OTHER DIRECTION AS WELL. THERE'S NO READ WRITE RESPONSES AND

02:48:42   25   REQUESTS.

02:48:42 1   Q.   AND WHAT'S THE CONSEQUENCE OF THAT DIFFERENCE IN DESIGN?

02:48:45 2   A.   I BELIEVE THAT OUR DESIGN PERFORMS BETTER BECAUSE THE

02:48:51 3   AGENT PROCESSES DON'T NEED TO WAIT FOR THE DATABASE TO PERFORM

02:48:53 4   THEIR BASIC FUNCTIONS.

02:48:55 5   MR. VAN NEST: THANK YOU.

02:48:57 6   NOTHING FURTHER.

02:48:57 7   THE COURT: MR. PAK, ANYTHING'S ELSE?

02:48:59 8   MR. PAK: JUST A QUICK QUESTION, YOUR HONOR.

02:49:03 9   **RECROSS-EXAMINATION**

02:49:03 10   BY MR. PAK:

02:49:03 11   Q.   YOU ARE NOT DISPUTING THAT CISCO HAD SYSDB IN THEIR

02:49:07 12   OPERATING SYSTEM BEFORE YOU STARTED WORK ON SYSDB AT ARISTA,

02:49:10 13   CORRECT? YOU ARE NOT DENYING THAT, ARE YOU?

02:49:13 14   A.   THESE ARE DIFFERENT SYSDB'S. THERE'S -- CISCO HAD A

02:49:17 15   TECHNOLOGY CALLED SYSDB IN ITS PRODUCTS AT SOME TIME BEFORE WE

02:49:21 16   DELIVERED OUR FIRST PRODUCT.

02:49:22 17   Q.   THAT'S RIGHT.

02:49:24 18   AND SIR, YOU HAD NO PERSONAL KNOWLEDGE OF HOW IOS XR

02:49:27 19   WORKED UNTIL YOUR TESTIMONY YOU JUST GAVE TODAY, CORRECT?

02:49:29 20   A.   THAT'S RIGHT.

02:49:30 21   MR. PAK: OKAY. THANK YOU.

02:49:32 22   THE COURT: IS THAT EVERYTHING FOR THIS WITNESS?

02:49:34 23   MR. PAK: YOUR HONOR, I THINK I WOULD LIKE TO

02:49:36 24   ACTUALLY MOVE TO STRIKE HIS RESPONSES ON IOS XR BASED ON HIS

02:49:40 25   LACK OF PERSONAL KNOWLEDGE. I THINK HE JUST TESTIFIED THAT HE

03:25:14   1   Q.   AND CAN YOU TELL US WHAT IT IS, PLEASE?

03:25:16   2   A.   SO THIS IS A PAGE FROM A PRESENTATION THAT I HAVE BEEN

03:25:21   3   GIVING FOR AT LEAST FIVE YEARS, I WOULD SAY, TO NEW ENGINEERS

03:25:25   4   THAT SHOW UP AT ARISTA.

03:25:26   5   WE HAVE A SORT OF A TRAINING SERIES TO NEW ENGINEERS AT

03:25:31   6   ARISTA EVERY, THE FIRST SIX WEEKS THEY GET A BUNCH OF TALKS TO

03:25:35   7   DIFFERENT PEOPLE, AND I GIVE ONE OF THOSE TALKS AND THIS IS A

03:25:37   8   PAGE TALKING ABOUT EOS.

03:25:39   9   Q.   THE FIRST BULLET POINT SAYS, "SUPPORT MESSING WITH EOS,"

03:25:42 10   WHAT DO YOU MEAN BY THAT?

03:25:43 11   A.   WELL, I MEAN, THE TITLE IS EXTENSIBILITY. SO I MEAN, EOS

03:25:46 12   STANDS FOR THE EXTENSIBLE OPERATING SYSTEM.

03:25:49 13   SO THIS IS TALKING ABOUT WAYS THAT YOU COULD EXTEND EOS.

03:25:54 14   SO THIS WAS LETTING CUSTOMERS USE EOS AND MODIFY IT, CUSTOMIZE

03:25:59 15   IT FOR THEIR OWN PURPOSES.

03:26:01 16   Q.   WHAT ABOUT EOS MAKES IT EXTENSIBLE?

03:26:04 17   A.   WELL, THERE'S A NUMBER OF THINGS, BUT I THINK IT WAS THE

03:26:08 18   WAY THAT WE EXPOSED LINUX TO CUSTOMERS. IT WAS THE

03:26:14 19   PROGRAMMABLE API'S THAT WE ADDED TO THE SYSTEM TO ALLOW OUR

03:26:18 20   CUSTOMERS TO PROGRAM IT. IT WAS THE CHOICE OF WHICH FLAVOR OF

03:26:22 21   LINUX WE USED.

03:26:24 22   Q.   HAVE YOU EVER PREPARED A DEMONSTRATION OF SORTS FOR

03:26:30 23   CUSTOMERS ABOUT HOW YOU CAN EXTEND EOS?

03:26:33 24   A.   YEAH, I HAVE MULTIPLE TIMES.

03:26:35 25   Q.   IF WE COULD LOOK AT THE SLIDE WE HAVE PREPARED FROM

03:26:39 1   EXHIBIT 7724. I THINK IT'S FROM THE LAST PAGE OF THAT EXHIBIT,

03:26:50 2   YEAH, THERE YOU GO.

03:26:51 3   DO YOU RECOGNIZE THIS?

03:26:52 4   A.   YES, I DO. THIS IS A PROGRAM, A LITTLE PROGRAM THEY WROTE

03:26:58 5   CALLED SENDPAGE.COM.

03:27:03 6   Q.   TO BE CLEAR, THIS IS A LITTLE COMPUTER PROGRAM?

03:27:06 7   A.   YES.

03:27:08 8   Q.   ALL RIGHT.

03:27:09 9   A.   THAT RUNS ON EOS.

03:27:10 10   Q.   WHY DID YOU PREPARE THIS LITTLE PROGRAM?

03:27:12 11   A.   SO THIS WAS AN EXAMPLE OF A RELATIVELY SHORT COMPUTER

03:27:17 12   PROGRAM THAT YOU COULD USE TO CUSTOMIZE EOS THAT A CUSTOMER

03:27:21 13   MIGHT ACTUALLY BE ABLE TO WRITE THEMSELVES.

03:27:24 14   Q.   SO TO BE CLEAR, DOES THIS PROGRAM COME WITH EOS?

03:27:29 15   A.   NO.

03:27:30 16   Q.   SO THE PURPOSE OF THIS DEMONSTRATION THAT YOU HAD WAS FOR

03:27:33 17   WHAT?

03:27:33 18   A.   WELL, THIS WAS TO SHOW A CUSTOMER HOW WITH A RELATIVELY

03:27:37 19   SIMPLE PROGRAM YOU COULD EXTEND EOS TO ADD SOME NEW

03:27:41 20   FUNCTIONALITY THAT WASN'T CONTEMPLATED BY US, THE SOFTWARE TEAM

03:27:46 21   THAT WROTE AND SOLD THE EOS.

03:27:48 22   Q.   AND WHAT DID THIS LITTLE PROGRAM DO?

03:27:50 23   A.   WELL, IT WAS A FAIRLY SIMPLE THING. SO THIS PROGRAM WAS

03:27:55 24   SIMPLE BUT POWERFUL, SO THIS PROGRAM WOULD, WHEN YOU PULLED OUT

03:28:00 25   A CABLE OUT OF THE FRONT PANEL OR WHEN A SERVER WOULD CRASH, IT

03:28:04 1   SENDS AN E-MAIL. AND IT CAN SEND AN E-MAIL TO -- BACK IN THOSE

03:28:09 2   DAYS, PEOPLE CARRIED A PAGER. SO WHEN YOU WERE A NETWORK

03:28:13 3   OPERATOR, YOU WOULD GET A PAGE WHEN A SERVER WENT DOWN.

03:28:16 4   Q.   NOW TO YOUR KNOWLEDGE, DID OTHER NETWORK OPERATING SYSTEMS

03:28:22 5   AT THIS TIME HAVE THE ABILITY TO ADD A PROGRAM LIKE THIS?

03:28:25 6   A.   NO. AS FAR AS I KNOW, WE WERE UNIQUE IN THAT REGARD.

03:28:27 7   Q.   AND WHEN DID YOU PREPARE THIS, BY THE WAY?

03:28:31 8   A.   2007, I THINK.

03:28:32 9   Q.   SO EARLY AT ARISTA?

03:28:33 10   A.   YEAH.

03:28:34 11   Q.   NOW IF YOU -- IN OTHER OPERATING SYSTEMS AT THE TIME, IF

03:28:42 12   YOU COULDN'T ADD YOUR OWN EXTENSIONS, HOW WOULD YOU BE ABLE TO

03:28:45 13   ADD FUNCTIONALITY TO THE OPERATING SYSTEM?

03:28:46 14   A.   WELL, YOU HAD TO GET THE VENDOR INVOLVED. SO YOU WOULD

03:28:49 15   HAVE TO CALL UP THE SWITCH VENDOR AND EXPRESS WHAT YOU WOULD

03:28:55 16   LIKE IT TO DO, GO BACK AND FORTH. THEY MIGHT START WORKING ON

03:28:59 17   IT. THEY WOULD DEVELOP IT, SIX MONTHS LATER IT MIGHT APPEAR IN

03:29:02 18   RELEASE, AND YOU MIGHT DEPLOY IT IN YOUR NETWORK A YEAR LATER

03:29:06 19   IF YOU WERE AN IMPORTANT ENOUGH CUSTOMER AND IF THEY THOUGHT IT

03:29:09 20   WAS WORTHWHILE FOR YOU TO BUILD THAT FEATURE FOR YOU.

03:29:11 21   Q.   AND IF WE COULD GO BACK THEN TO THE PREVIOUS SLIDE WE

03:29:16 22   LOOKED AT EXTENSIBILITY.

03:29:20 23   THE LAST BULLET POINT HERE SAYS, "HUGE QUESTION IS CAN WE

03:29:24 24   SUPPORT THIS," WHAT DID YOU MEAN BY THAT?

03:29:27 25   A.   SO THIS WAS AN INTERNAL DEBATE WITH RESPECT TO ALLOWING

03:29:31 1   CUSTOMERS TO EXTEND EOS. SO THE FEAR WAS THAT IF A CUSTOMER

03:29:35 2   EXTENDED EOS, THAT THAT COULD CREATE PROBLEMS, LIKE THEY COULD

03:29:39 3   INTERFERE WITH THINGS THAT WE WERE DOING INSIDE EOS AND WE KIND

03:29:43 4   OF WOULD STEP ON EACH OTHER AND THE SWITCH WOULD BE BROKEN.

03:29:46 5   AND THEN THE CUSTOMER WOULD CALL US UP OR CALL OUR SUPPORT

03:29:49 6   LINE AND SAY, HEY, MY SWITCH ISN'T WORKING, AND WE WOULDN'T

03:29:53 7   KNOW HOW TO FIX IT BECAUSE WE DIDN'T KNOW WHAT KIND OF CHANGES

03:29:56 8   THEY MIGHT HAVE MADE AND WE WERE OPENING UP ALL OF EOS AND ALL

03:29:59 9   OF LINUX TO THE CUSTOMERS TO MODIFY IT.

03:30:01 10   SO THAT WAS THE "CAN WE SUPPORT THIS QUESTION," WILL WE

03:30:05 11   LITERALLY BE ABLE TO SUPPORT THE CUSTOMERS WHEN THEY CHANGE IT.

03:30:08 12   Q.   WHAT DID YOU LEARN AS AN ANSWER TO THIS QUESTION, IF YOU

03:30:11 13   WILL?

03:30:11 14   A.   WELL, I MEAN, THIS WAS KIND OF THROUGH DISCUSSIONS AND

03:30:14 15   THROUGH OUR EXPERIENCE, THIS WAS ACTUALLY AN UNFOUNDED CONCERN.

03:30:19 16   IF YOU THINK ABOUT IT, OTHER OPERATING SYSTEM VENDORS LIKE

03:30:23 17   APPLE AND MICROSOFT, THEY DON'T TELL CUSTOMERS, YOU CAN'T RUN

03:30:27 18   SOFTWARE ON OUR PRODUCTS, WE WON'T BE ABLE TO SUPPORT YOU, IT

03:30:31 19   MIGHT BREAK SOMETHING.

03:30:32 20   AND THAT'S CRAZY, RIGHT, YOU BUY AN APPLE LAPTOP AND YOU

03:30:35 21   CAN'T INSTALL SOFTWARE ON IT. AND WHY SHOULD SWITCH VENDORS BE

03:30:39 22   ANY DIFFERENT BECAUSE FUNDAMENTALLY, IT'S JUST AN OPERATING

03:30:42 23   SYSTEM. LINUX ISN'T THAT DIFFERENT FROM MAC OS OR WINDOWS,

03:30:45 24   IT'S JUST ANOTHER OPERATING SYSTEM.

03:30:46 25   AND WE SAID, WE SHOULD BE ABLE TO SUPPORT THIS. AND IN

03:30:50 1   FACT, WE HAVE BEEN ABLE TO BECAUSE THE CUSTOMERS HAVE BEEN

03:30:53 2   INSTALLING THESE EXTENSIONS ON THEIR SWITCH, DON'T ACTUALLY

03:30:57 3   BREAK THINGS.

03:30:57 4   I MEAN, IN WINDOWS I CAN GO IN OR IN THE MAC OS I CAN GO

03:31:04 5   IN AND DELETE ALL KINDS OF FILES THAT WOULD MAKE MY SYSTEM

03:31:07 6   NONOPERATIONAL, BUT PEOPLE DON'T HAVE ANY INTEREST IN DOING

03:31:16 7   THAT BECAUSE OUR CUSTOMERS AREN'T INTERESTED IN BEING ON THE

03:31:20 8   PHONE WITH OUR TECH SUPPORT, WHILE WE FIGURE OUT WHAT'S WRONG

03:31:24 9   WITH THEIR SYSTEM.

03:31:25 10 Q.   OKAY.   LINUX HAS BEEN DISCUSSED?

03:31:27 11 A.   YES.

03:31:28 12 Q.   A NUMBER OF TIMES.   AND DO YOU HAVE ANY EXAMPLES YOU COULD

03:31:34 13 GIVE ABOUT HOW ARISTA'S USE OF LINUX HAS BEEN A BENEFIT TO

03:31:40 14 CUSTOMERS?

03:31:41 15 A.   OH, SURE.   WELL, SO ONE EXAMPLE, AND IT'S NOT JUST LINUX

03:31:47 16 BUT IT'S, IT'S THE PARTICULAR WAY WE INTEGRATED LINUX, BUT WE

03:31:52 17 MADE IT POSSIBLE FOR OUR CUSTOMERS TO USE OPEN SOURCE LINUX

03:31:55 18 SOFTWARE.

03:31:58 19   SO THERE'S ONE PARTICULAR PHONE CALL THAT I REMEMBER WITH

03:32:00 20 ONE OF THE NEW YORK BANKS, I THINK IT WAS MERRILL LYNCH, IN

03:32:04 21 2008 OR 2009, 2007, I'M NOT SURE, WHERE THEY WERE ON THE PHONE

03:32:09 22 AND THAT ASKED IF WE SUPPORTED SOMETHING CALLED PTP, WHICH

03:32:13 23 STANDS FOR THE PRECISION TIME KEEPING PROTOCOL.

03:32:15 24   IT'S A WAY TO SYNCHRONIZE THE CLOCK OF A COMPUTER VERY

03:32:18 25 ACCURATELY.   AND I HAD NEVER HEARD OF IT AND I SAID NO, SORRY,

03:32:21 1   WE DON'T SUPPORT PTP. AND SO THE CALL ENDED.

03:32:23 2   THEN AFTER THE CALL I SAID, MAYBE I SHOULD LOOK INTO PTP.

03:32:27 3   SO I LITERALLY GOOGLED PTP, AND IT TOOK ME TO A WEBSITE WHICH

03:32:32 4   WAS PTP.ORG. AND I WENT TO PTP.ORG AND IT HAD, YOU KNOW, A

03:32:37 5   SMALL WEB FRONT END AND IT HAD A READ ME FILE AND CLICK HERE TO

03:32:41 6   DOWNLOAD SOFTWARE.

03:32:42 7   SO I DOWNLOADED THIS SOFTWARE ONTO MY LAPTOP, UNPACKED IT,

03:32:46 8   COMPILED IT, AND THEN COPIED THE EXECUTABLE BINARY TO OUR

03:32:52 9   SWITCH AND STARTED THE PROGRAM.

03:32:54 10   AND THAT WAS LIKE ALL IN THE SPACE OF AN HOUR GOING FROM,

03:32:58 11   I NEVER LITERALLY HEARD OF PTP, TO HAVING IT RUNNING AS A

03:33:01 12   FEATURE ON OUR SWITCH.

03:33:03 13   AND THEN I CALLED BACK THE ACCOUNT TEAM AND SAID WAIT, NO,

03:33:06 14   I TOLD YOU THAT WE DIDN'T SUPPORT PTP, I THINK WE ACTUALLY CAN.

03:33:10 15   AND THAT'S, FOR ME, WAS A MOMENT WHERE I'M LIKE, WE ARE ON TO

03:33:15 16   SOMETHING, LIKE, THIS IS REALLY NEAT.

03:33:17 17   Q.   WAS THAT SIMILAR BEHAVIOR AVAILABLE IN OTHER NETWORK

03:33:25 18   OPERATING SYSTEMS, TO YOUR KNOWLEDGE?

03:33:26 19   A.   NONE THAT I KNOW OF.

03:33:28 20   Q.   IF WE COULD PUT UP, MR. DAHM, THE SECOND, THE THIRD

03:33:33 21   DEMONSTRATIVE PAGE THAT WE HAD FOR MR. HOLBROOK. SORRY, NO

03:33:37 22   IT'S THE VARIOUS FEATURES.

03:33:41 23   THERE WE GO. DO YOU RECOGNIZE THIS, MR. HOLBROOK?

03:33:44 24   A.   YES, I DO.

03:33:44 25   Q.   WHAT IS IT, PLEASE?

03:35:19 1   A.   WELL, IT'S NOT THE -- THE DELAY IS FOR -- VERY SHORT

03:35:24 2   DELAYS CAN RESULT IN PACKET DROPS WHICH CAN HAVE MEANINGFUL

03:35:29 3   IMPACTS ON CUSTOMER'S APPLICATIONS IF THEY ARE NOT EXPECTING

03:35:34 4   THEIR PACKETS TO BE DROPPED.

03:35:36 5   THIS WAS IMPORTANT IN HIGH PERFORMANCE COMPUTING AND SOME

03:35:39 6   FINANCIAL APPLICATIONS, RELIABLE, ALWAYS ON TIME DELIVERY

03:35:41 7   WITHOUT DELAYS, WELL, CUSTOMERS DIDN'T DESIGN THEIR NETWORKS

03:35:45 8   WITH THE EXPECTATION THAT THEY WOULD GET THAT, AND THEY WANTED

03:35:48 9   TO KNOW IF THEY WERE EVER EXPERIENCING DELAYS OR DROPS THAT WE

03:35:51 10   COULDN'T OTHERWISE SEE.

03:35:52 11   Q.   SO DOES ARISTA HAVE ANY INTELLECTUAL PROPERTY ASSOCIATED

03:35:55 12   WITH THIS LATENCY ANALYZER FEATURE?

03:35:57 13   A.   YES, WE FILED A PATENT ON THIS.

03:36:00 14   Q.   AND DO YOU HAVE ANY INVOLVEMENT IN THAT?

03:36:02 15   A.   YEAH. I WAS ONE OF THE INVENTORS, ALONG WITH

03:36:06 16   ANSHUL SADANA AND KEN DUDA.

03:36:08 17   Q.   THE NEXT ITEM I WANTED TO TALK ABOUT BRIEFLY IS ZTP. CAN

03:36:12 18   YOU TELL THE LADIES AND GENTLEMEN OF THE JURY WHAT THAT IS?

03:36:14 19   A.   YES, ZTP IS ANOTHER FEATURE WE DEVELOPED AT ARISTA, AND IT

03:36:18 20   STANDS FOR ZERO TOUCH PROVISIONING.

03:36:21 21   SO THE IDEA BEHIND ZTP WAS TO SIMPLIFY THE INSTALLATION OF

03:36:30 22   LARGE DATA CENTERS WITH LOTS AND LOTS OF SWITCHES IN THEM AND

03:36:35 23   ALLOW SOMEONE TO INSTALL A SWITCH, PLUG IT IN AND THEN HAVE IT

03:36:39 24   JUST WORK.

03:36:40 25   Q.   CAN YOU GIVE AN EXAMPLE OF HOW ZTP HAS BEEN USED BY A

03:36:45 1   CUSTOMER OF ARISTA'S?

03:36:46 2   A.   YEAH, ACTUALLY THERE WAS A CUSTOMER THAT JUST A COUPLE OF

03:36:48 3   MONTHS AGO, TOLD ME THAT THEY INSTALLED A 10,000 SQUARE FOOT

03:36:53 4   DATA CENTER WITH 136 RACKS, I THINK, AND 22 SPINE SWITCHES IN

03:36:57 5   IT.

03:36:59 6   AND IT TOOK THEM TWO HOURS TO POWER IT ALL ON, GET ALL OF

03:37:03 7   THE SWITCHES CONFIGURED BECAUSE THEY DIDN'T USE ZTP, AMONG

03:37:06 8   OTHER THINGS.

03:37:07 9   Q.   HOW WOULD THAT COMPARE TO A WAY OF PROVISIONING A NETWORK

03:37:11 10   OF THAT SIZE WITHOUT ZTP?

03:37:13 11   A.   WELL, THE OLD WAY WAS TO PLUG A SWITCH IN, CONNECT A CABLE

03:37:17 12   TO IT, TYPE SOMETHING IN AT THE CONSOLE, AND THEN CHECK THAT IT

03:37:21 13   WAS PROPERLY CONFIGURED AND THEN MOVE ON TO THE NEXT ONE.

03:37:25 14   AND THIS PARTICULAR CUSTOMER TOLD US THAT IT HAD TAKEN

03:37:28 15   THEM ABOUT TWO WEEKS THE LAST TIME THEY BROUGHT UP A DATA

03:37:31 16   CENTER BEFORE THEY HAD DONE ALL THE WORK WITH ZTP.

03:37:34 17   Q.   OKAY. LAST ONE. OUR TIME IS LIMITED.

03:37:37 18   CLOUD VISION. CAN YOU TELL US WHAT CLOUD VISION IS?

03:37:39 19   A.   YEAH. SO CLOUD VISION IS A FEATURE THAT ARISTA DEVELOPED

03:37:43 20   TO MANAGE A CLOUD OF NETWORK SWITCHES. SO MANAGE A CLOUD

03:37:51 21   NETWORK.

03:37:52 22   SO CUSTOMERS THAT HAVE A LOT OF SWITCHES LIKE TO AUTOMATE

03:37:57 23   THE MANAGEMENT OF THESE LARGE NUMBER OF SWITCHES. SO ONE OF

03:38:00 24   THE THINGS THAT CLOUD VISION PROVIDES IS I CAN MAKE A

03:38:05 25   CONFIGURATION CHANGE, I CAN SCHEDULE A CONFIGURATION CHANGE,

03:45:53 1   Q.   AND THEN FOR THE DELL SWITCH, AT LEAST FOR THE

03:45:57 2   POWERCONNECT 8024 IT SAYS, NOT CONSISTENT WITH IOS; RIGHT?

03:46:01 3   A.   YES.

03:46:02 4   Q.   SO JUST A FEW MORE QUESTIONS FOR YOU, SIR.

03:46:06 5   SO YOU CAN PUT 6095 ASIDE. SO YOU ARE NOT AWARE OF ANY

03:46:21 6   ANALYSIS AT ARISTA OF OTHER EQUIPMENT VENDORS AND HOW OFTEN

03:46:25 7   THEY USE ANY PARTICULAR CLI COMMAND; ISN'T THAT RIGHT?

03:46:28 8   A.   NO, I'M NOT AWARE.

03:46:30 9   Q.   AND YOU WERE THE FIFTH EMPLOYEE, I THINK YOU SAID AT

03:46:33 10   ARISTA; IS THAT RIGHT?

03:46:35 11   A.   SOMETHING LIKE THAT.

03:46:36 12   Q.   OKAY. SO I WANT TO TALK TO YOU A BIT ABOUT THE STANDARDS.

03:46:43 13   YOU TALKED ABOUT THE ITEF; DO YOU RECALL THAT?

03:46:47 14   A.   CORRECT.

03:46:47 15   Q.   AND YOU HAD, YOU SHOWED US AN EXAMPLE OF AN RFC THAT YOU

03:46:51 16   SUBMITTED; RIGHT?

03:46:52 17   A.   YES.

03:46:53 18   Q.   AND THE ITEF, THAT GENERALLY CONCERNS LIKE PROTOCOLS AND

03:46:57 19   THINGS LIKE THAT; RIGHT?

03:47:02 20   A.   AMONG OTHER THINGS, YES.

03:47:03 21   Q.   IN OTHER WORDS HOW THE DATA MIGHT BE FORMATTED TO PASS IT

03:47:06 22   BACK AND FORTH BETWEEN EQUIPMENT, THINGS LIKE THAT?

03:47:09 23   A.   THINGS LIKE THAT.

03:47:10 24   Q.   BUT YOU'RE NOT AWARE OF ANY STANDARDS SETTING ORGANIZATION

03:47:14 25   THAT HAS STANDARDIZED WHAT A COMMAND-LINE INTERFACE WOULD BE;

03:47:20	1	RIGHT?
03:47:20	2	A. NO, I'M NOT.
03:47:21	3	Q. AND THIS ITEF, OF WHICH YOU ARE A MEMBER I TAKE IT; RIGHT?
03:47:28	4	A. MEMBER SHIP ISN'T REALLY AN EVENT WITH THE ITEF, YOU
03:47:32	5	BECOME A MEMBER BY GOING.
03:47:33	6	Q. SO YOU GO TO THE MEETINGS?
03:47:35	7	A. WELL, I DON'T THINK I HAVE BEEN SINCE 2005.
03:47:38	8	Q. OKAY. YOU WENT TO SOME OF THE MEETINGS?
03:47:41	9	A. I DID.
03:47:41	10	Q. BUT YOU'RE NOT AWARE OF ANY STANDARDS THAT THE ITEF HAS
03:47:45	11	ISSUED CONCERNING COMMAND-LINE INTERFACES; RIGHT?
03:47:47	12	A. NO, I'M NOT AWARE OF ANY.
03:47:49	13	Q. NOW, YOU'RE AWARE THAT JUNIPER HAS A CLI THAT'S PRETTY
03:47:56	14	DIFFERENT FROM ARISTA'S CLI; RIGHT?
03:47:59	15	A. IT'S DIFFERENT IN SOME NOTABLE WAYS.
03:48:04	16	Q. DIFFERENT IN SOME IMPORTANT WAYS, CORRECT?
03:48:06	17	A. I THINK IT'S DIFFERENT IN NOTABLE WAYS, YES.
03:48:11	18	Q. ARE YOU DRAWING A DISTINCTION BETWEEN NOTABLE AND
03:48:14	19	IMPORTANT?
03:48:15	20	A. IT'S NOTABLY DIFFERENT, I'M NOT SURE WHAT THE MEASURE OF
03:48:19	21	IMPORTANCE IS.
03:48:20	22	Q. I'M JUST GOING BY WHAT YOU INSIDE YOUR DEPO, I JUST WANT
03:48:24	23	TO KNOW IF YOU'RE MAKING A DISTINCTION BETWEEN NOTABLE AND
03:48:27	24	IMPORTANT?
03:48:27	25	MR. FERRALL: OBJECTION, YOUR HONOR. THIS LINE IS

04:19:07 1   INDUSTRY STANDARDS?

04:19:07 2   A.   IT USED MANY.

04:19:08 3   Q.   AND WHY DID THE JUNOS CLI USE TERMS FROM INDUSTRY

04:19:13 4   STANDARDS?

04:19:13 5   A.   IT WAS IMPORTANT THAT WE HAVE A PRODUCT THAT WAS

04:19:17 6   CONVENIENT AND WELL KNOWN TO THE EXISTING CUSTOMER BASE.

04:19:25 7   Q.   NOW YOU LEFT JUNIPER IN 1999, CORRECT?

04:19:29 8   A.   I DID.

04:19:29 9   Q.   AFTER YOU LEFT JUNIPER, WHERE DID YOU WORK NEXT, MR. LI?

04:19:33 10   A.   I WAS A COFOUNDER OF PROCKET NETWORKS.

04:19:35 11   Q.   AND WHAT WAS YOUR POSITION AT PROCKET NETWORKS, BESIDES

04:19:38 12   COFOUNDER?

04:19:39 13   A.   I WAS ALSO THE DIRECTOR OF SOFTWARE ENGINEERING AND CHIEF

04:19:42 14   SCIENTIST.

04:19:43 15   Q.   AND THAT WAS IN 1999, AROUND THERE?

04:19:46 16   A.   YES.

04:19:47 17   Q.   AND WHAT WAS THE PRODUCT THAT YOU WERE WORKING ON AT

04:19:51 18   PROCKET NETWORKS?

04:19:52 19   A.   WE WERE DEVELOPING ANOTHER CORE ROUTER, TWO MODELS, THE

04:19:58 20   8812 AND THE 8801.

04:19:59 21   Q.   AND DID THE 8812 AND 8801 ROUTER FROM PROCKET NETWORKS WAS

04:20:08 22   THAT A COMPETING PRODUCT TO CISCO'S ROUTERS?

04:20:11 23   A.   AND JUNIPER'S.

04:20:12 24   Q.   DID THE PROCKET NETWORKS ROUTER THAT YOU WERE DEVELOPING

04:20:18 25   OR DEVELOPED HAVE A COMMAND-LINE INTERFACE?

04:20:20 1   A.   IT DID.

04:20:20 2   Q.   AND WHAT WAS YOUR ROLE, MR. LI, IN THE DEVELOPMENT OF THE

04:20:26 3   CLI ON THE PROCKET NETWORKS ROUTER?

04:20:29 4   A.   SO MY ROLE AS DIRECTOR OF SOFTWARE OF ENGINEERING WAS TO

04:20:32 5   LEAD THE TEAM THAT WAS DEVELOPING THAT ENTIRE CLI.

04:20:36 6   I SET THE DIRECTION AND SPECIFICALLY REQUESTED TO THAT

04:20:39 7   TEAM THAT THEY BUILD THE CLI THAT EMULATED CISCO'S IOS.

04:20:45 8   Q.   AND WHEN YOU SAY "EMULATED CISCO IOS," WHAT DO YOU MEAN BY

04:20:50 9   THAT?

04:20:50 10   A.   WE USED MANY OF THE SAME SYNTACTICAL TERMS. WE WERE

04:20:55 11   TRYING TO ACHIEVE BUG-FOR-BUG COMPATIBLE WITH CISCO IOS.

04:21:00 12   Q.   AND WHEN WAS THAT DECISION MADE AT PROCKET NETWORKS TO

04:21:03 13   EMULATE THE CISCO CLI DOWN TO THE BUGS?

04:21:05 14   A.   APPROXIMATELY 1999.

04:21:08 15   Q.   AND DID PROCKET NETWORKS CARRY OUT THAT DECISION WHEN IT

04:21:16 16   DESIGNED ITS CLI?

04:21:16 17   A.   WE DID.

04:21:17 18   Q.   TO WHAT EXTENT, IF AT ALL, WAS COMPATIBILITY A

04:21:23 19   CONSIDERATION WHEN PROCKET NETWORKS DECIDED TO MIMIC THE CISCO

04:21:28 20   IOS CLI?

04:21:30 21   A.   COMPATIBILITY WAS OUR FOREMOST CONSIDERATION. WE WANTED

04:21:34 22   OUR ROUTER TO BE AS COMPATIBLE WITH OPERATIONAL REQUIREMENTS AS

04:21:39 23   WE COULD FOR THE CISCO INSTALLED BASE.

04:21:43 24   Q.   TO WHAT EXTENT, IF AT ALL, DID THE PROCKET NETWORKS'S CLI

04:21:51 25   TRY TO MIMIC THE CLI COMMAND SET SUPPORTED BY CISCO IOS CLI?

04:21:55 1   A.   WE TRIED TO INSTANTIATE AS MANY OF THE CISCO IOS COMMANDS

04:21:59 2   AS WERE RELEVANT TO OUR FUNCTIONAL BASIS OF OUR OPERATING

04:22:05 3   SYSTEM.

04:22:05 4   Q.   AND WHEN YOU SAY "INSTANTIATE," DO YOU MEAN -- WHAT DO YOU

04:22:09 5   MEAN BY THAT?

04:22:09 6   A.   TRY TO DEVELOP THE SAME COMMANDS, AS MANY AS POSSIBLE.

04:22:13 7   Q.   AND WHEN YOU SAY THE "SAME COMMANDS," DO YOU MEAN THE SAME

04:22:17 8   WORDS IN THE SAME ORDER?

04:22:18 9   A.   THE SAME WORDS USING THE EXACT SAME SYNTAX.

04:22:22 10   Q.   TO WHAT EXTENT, IF AT ALL, DID THE PROCKET NETWORK'S CLI

04:22:27 11   TRY TO MIMIC THE COMMAND RESPONSES AND OUTPUTS FOR THE CISCO

04:22:31 12   IOS CLI?

04:22:32 13   A.   THAT WAS A LITTLE MORE DIFFICULT. WE DID WHAT WE COULD TO

04:22:36 14   BE SIMILAR, BUT WE COULD NOT BE EXACTLY LITERAL.

04:22:41 15   Q.   AND WHAT ABOUT THE CISCO IOS CLI MODES AND PROMPTS, DID

04:22:45 16   THE PROCKET NETWORK'S CLI TRY TO EMULATE THOSE MODES AND

04:22:50 17   PROMPTS?

04:22:50 18   A.   YES, WE TRIED TO DO THAT. MANY CUSTOMERS HAD PROGRAMS

04:22:54 19   THAT DEPENDED ON THOSE MODES AND PROMPTS, AND WE WANTED TO

04:22:58 20   INTERACT WITH THOSE AS SEAMLESSLY AS POSSIBLE.

04:23:03 21   Q.   WHAT ABOUT TYPOGRAPHICAL ERRORS THAT MIGHT HAVE EXISTED

04:23:06 22   WITHIN THE CISCO IOS CLI. DID PROCKET NETWORKS TRY TO MIMIC

04:23:09 23   THOSE ERRORS AS WELL?

04:23:10 24   A.   AS FAR AS I KNOW, WE TRIED TO FIX THOSE.

04:23:13 25   Q.   OKAY. WHEN YOU SAID BUG-FOR-BUG COMPATIBLE EARLIER IN

04:23:17 1   YOUR TESTIMONY, WHAT DID YOU MEAN BY THAT?

04:23:19 2   A.   THERE WERE SEVERAL FUNCTIONS WITHIN CISCO IOS THAT WE FELT

04:23:24 3   WERE INAPPROPRIATE OR INCORRECT, AND THERE WERE STRONG ENGINEER

04:23:28 4   ARGUMENTS THAT WE SHOULD HAVE A DIFFERENT BEHAVIOR.

04:23:31 5   WE CHOSE TO EMULATE THE CISCO'S BEHAVIOR FOR THOSE

04:23:35 6   FUNCTIONS RATHER THAN DO WHAT WE FELT WAS ACTUALLY A BETTER

04:23:39 7   IMPLEMENTATION.

04:23:39 8   Q.   AND WHY WAS THE DECISION MADE TO ACTUALLY KEEP THE BUGS

04:23:43 9   FROM THE CISCO IOS CLI IN THE PROCKET NETWORK'S CLI?

04:23:47 10   A.   CHANGING OUR BEHAVIOR WOULD HAVE MADE US INCOMPATIBLE WITH

04:23:53 11   THE CISCO INSTALL BASE AND WOULD HAVE CAUSED THE CUSTOMERS

04:23:56 12   GREATER DIFFICULTY.

04:23:57 13   Q.   DID YOU BELIEVE AT THE TIME THAT YOU ARE WERE WORKING AT

04:23:59 14   PROCKET NETWORKS, MR. LI, THAT IT WAS OKAY TO EMULATE THE CISCO

04:24:04 15   CLI?

04:24:04 16   A.   YES, WE BELIEVED SO.

04:24:06 17   Q.   AND WHY DID YOU BELIEVE IT WAS OKAY FOR PROCKET NETWORKS

04:24:10 18   TO EMULATE THE CISCO CLI, INCLUDING THE COMMANDS AND THE MODES

04:24:14 19   AND PROMPTS?

04:24:14 20   A.   WE HAD ONE MEMBER FROM CISCO ON OUR BOARD WHO KNEW WHAT WE

04:24:19 21   WERE DOING, HAD RAISED NO OBJECTION, AND THEN WE ALSO HAD AN

04:24:23 22   EXAMPLE FROM FOUNDRY NETWORKS, WHO WAS ALSO EMULATING THE FULL

04:24:27 23   CISCO COMMAND SET, AND WE HAD HEARD NOTHING FROM THEM ABOUT ANY

04:24:31 24   DIFFICULTIES.

04:24:32 25   Q.   WHY DID PROCKET NETWORKS CHOOSE TO EMULATE THE CISCO IOS

04:24:40	1	CLI AS OPPOSED TO THE JUNOS CLI THAT WAS USED BY JUNIPER?
04:24:45	2	A. AT THE TIME, CISCO HAD ABOUT 99 PERCENT MARKET SHARE.
04:24:49	3	Q. DID PROCKET NETWORKS EVER ASK ANYONE AT CISCO FOR
04:24:57	4	PERMISSION TO USE THE SAME COMMANDS THAT WERE IN THE IOS CLI?
04:25:03	5	A. WE DID NOT.
04:25:04	6	Q. AND WHY NOT, MR. LI?
04:25:06	7	A. WE FELT THAT BECAUSE FOUNDRY WAS NOT BEING PURSUED, THAT
04:25:10	8	WE WOULD NOT BE PURSUED EITHER. THAT WE WERE NOT ACTUALLY
04:25:16	9	INFRINGING ON CISCO'S INTELLECTUAL PROPERTY. THE CONCEPTS
04:25:20	10	BEHIND THE COMMANDS WERE FAR MORE IMPORTANT THAN THE COMMANDS
04:25:25	11	THEMSELVES.
04:25:26	12	Q. AND HOW LONG WERE YOU WORKING AT PROCKET NETWORKS, MR. LI?
04:25:29	13	A. FIVE YEARS.
04:25:30	14	Q. DURING THAT ENTIRE TIME PERIOD, DID YOU HEAR ANY OBJECTION
04:25:33	15	FROM CISCO TO PROCKET NETWORKS'S USE OF THE CISCO CLI?
04:25:37	16	A. NO, NONE AT ALL.
04:25:39	17	Q. AND DURING THAT FIVE-YEAR TIME PERIOD, MR. LI, DID PROCKET
04:25:45	18	NETWORKS DO ANYTHING TO TRY TO HIDE THE FACT THAT IT WAS USING
04:25:47	19	MANY OF THE SAME COMMANDS, MODES AND PROMPTS AS THE CISCO IOS
04:25:51	20	CLI?
04:25:52	21	A. ACTUALLY WE ACTIVELY TOUTED THAT TO THE CUSTOMER BASE.
04:25:55	22	Q. IF YOU OR THE MANAGEMENT OF PROCKET NETWORKS THOUGHT IT
04:26:06	23	WAS WRONG OR UNETHICAL TO COPY THE CISCO IOS CLI, WOULD YOU
04:26:09	24	HAVE DONE SO?
04:26:09	25	A. NO.

04:29:37 1   A.   NO, I BELIEVE THAT'S A SMALL SUBSET, ACTUALLY.

04:29:40 2   Q.   DO YOU KNOW WHAT HAPPENED TO THE REST OF THE PROCKET

04:29:42 3   NETWORKS MANUALS AFTER ITS ASSETS WERE ACQUIRED BY CISCO?

04:29:47 4   A.   SO AFTER ACQUISITION, CISCO REQUESTED THAT ALL MATERIALS

04:29:50 5   BE DESTROYED.

04:29:51 6   Q.   WOULD IT SURPRISE YOU, MR. LI, THAT IN THIS LIMITED SUBSET

04:29:54 7   OF MANUALS IN THE TWO BINDERS HERE, THAT THERE ARE OVER 300

04:29:59 8   COMMANDS THAT OVERLAP WITH CISCO IOS COMMANDS?

04:30:01 9   A.   NO SURPRISE AT ALL.

04:30:03 10   Q.   WOULD YOU EXPECT THERE TO BE HUNDREDS MORE IN THE COMMANDS

04:30:06 11   THAT ARE NOW MISSING?

04:30:08 12   A.   YES.

04:30:11 13   Q.   AND MR. LI, AFTER YOU LEFT PROCKET -- WELL, WHEN DID YOU

04:30:16 14   LEAVE PROCKET NETWORKS?

04:30:16 15   A.   I LEFT IN 2004.

04:30:19 16   Q.   AFTER YOU LEFT PROCKET NETWORKS, YOU RETURNED TO CISCO HOW

04:30:21 17   MANY MORE TIMES?

04:30:22 18   A.   THREE MORE TIMES.

04:30:23 19   Q.   AND MOST RECENTLY YOU WORKED AT CISCO UNTIL ABOUT 2013,

04:30:28 20   CORRECT?

04:30:29 21   A.   YES, THAT'S CORRECT.

04:30:30 22   Q.   DO YOU KNOW WHAT A CISCO FELLOW IS?

04:30:31 23   A.   I DO.

04:30:32 24   Q.   WHAT IS A CISCO FELLOW?

04:30:35 25   A.   THAT'S A TITLE FOR THE PEOPLE AT THE TOP LEVEL OF THE

04:30:38 1   TECHNICAL TRACK AT CISCO.

04:30:40 2   Q.   DID YOU EVER OBTAIN THE TITLE OF CISCO FELLOW WHILE YOU

04:30:44 3   WERE AT CISCO?

04:30:45 4   A.   I DID.

04:30:45 5   Q.   AND OVER ALL THE YEARS THAT YOU WORKED AT CISCO, AFTER

04:30:52 6   COPYING THE IOS CLI AND USING IT AT PROCKET, DID ANYONE EVER

04:30:58 7   TELL YOU THAT IT WAS WRONG FOR PROCKET NETWORKS TO COPY THE

04:31:01 8   CISCO CLI DOWN TO ITS BUGS?

04:31:03 9   A.   NO.   I NEVER HEARD ANYONE CLAIM THAT THAT WAS WRONG.

04:31:07 10   Q.   THANK YOU, MR. LI.

04:31:11 11   I HAVE NO FURTHER QUESTIONS.

04:31:14 12   THE COURT: MR. NELSON, CROSS-EXAMINATION?

04:31:17 13   MR. NELSON: YES, YOUR HONOR.

04:31:19 14   THE COURT: GO AHEAD.

04:31:20 15   **CROSS-EXAMINATION**

04:31:20 16   BY MR. NELSON:

04:31:37 17   Q.   GOOD AFTERNOON, SIR.

04:31:39 18   A.   GOOD AFTERNOON.

04:31:39 19   Q.   MY NAME IS DAVE NELSON AND I REPRESENT CISCO IN THE CASE.

04:31:45 20   I'M GOING TO ASK YOU A FEW QUESTIONS?

04:31:46 21   A.   PLEASE.

04:31:47 22   Q.   FIRST OF ALL, I SHOULD GET YOUR TITLE RIGHT.   I KNOW YOU

04:31:50 23   HAVE A PH.D., BUT WHAT DO YOU GO BY, MR.?   DOCTOR?

04:31:53 24   A.   DOCTOR IS FINE.

04:31:54 25   Q.   OKAY.   I WILL DO THAT, SIR.

04:31:57 1   SO DR. LI THEN, I WANT TO TALK ABOUT PROCKET A LITTLE BIT.

04:32:00 2   SO THAT WAS THE COMPANY THAT YOU MENTIONED EARLIER THAT

04:32:03 3   STARTED ABOUT 1999; RIGHT?

04:32:04 4   A.   UH-HUH, YES.

04:32:05 5   Q.   AND CISCO WAS AN INVESTOR IN THAT COMPANY YOU MENTIONED?

04:32:12 6   A.   YES.

04:32:12 7   Q.   SO THEY OWNED PART OF THAT COMPANY, CORRECT?

04:32:14 8   A.   YES.

04:32:16 9   Q.   AND HAD SOMEBODY SITTING ON THE BOARD, I THINK YOU

04:32:18 10   MENTIONED, RIGHT?

04:32:18 11   A.   A BOARD AND SERVER.

04:32:20 12   Q.   SO I THINK WHEN YOU WERE TALKING ABOUT THE PROCKET SWITCH,

04:32:23 13   THE PRODUCT THEY HAD THAT YOU SAID THAT YOU COPIED THE COMMANDS

04:32:29 14   THAT WERE RELEVANT TO THE FEATURE SET YOU HAD, ISN'T THAT

04:32:32 15   RIGHT?

04:32:32 16   A.   THAT'S CORRECT.

04:32:32 17   Q.   SO IN OTHER WORDS, YOU DIDN'T COPY COMMANDS THAT WEREN'T

04:32:35 18   RELEVANT TO FEATURES YOU DIDN'T HAVE IN THE PRODUCT; RIGHT?

04:32:38 19   A.   YES.

04:32:38 20   FOR EXAMPLE, SINCE WE DID NOT SUPPORT APPLE TALK, WE DID

04:32:43 21   NOT IMPLEMENT THE APPLE TALK COMMANDS OUT OF IOS.

04:32:46 22   Q.   RIGHT. IT WOULDN'T MAKE MUCH SENSE TO COPY COMMANDS THAT

04:32:49 23   DON'T HAVE ANYTHING TO DO WITH THE FEATURES IN YOUR PRODUCTS;

04:32:54 24   RIGHT?

04:32:54 25   A.   YES.

04:34:06   1   MR. VAN NEST: YOUR HONOR, AT THIS TIME WE PLAN TO

04:34:07   2   PLAY THE VIDEO TAPE DEPOSITION OF MR. GREG SATZ. AND THE VIDEO

04:34:12   3   TAPE IS ABOUT 15 MINUTES IN LENGTH.

04:34:15   4   THE COURT: OKAY.

04:34:15   5   MR. SILBERT: SATZ IS S-A-T-Z. AND I WILL GIVE

04:34:19   6   YOUR HONOR, LATER, THE TIME COUNT. THIS HAS CLIPS FROM BOTH

04:34:23   7   PARTIES.

04:34:24   8   THE COURT: THANK YOU.

04:34:25   9   MR. VAN NEST: SO WE ARE GOING TO PLAY IT ONCE WITH

04:34:27 10   EVERYTHING IN IT, AND THEN WE WILL HAVE HEARD FROM MR. SATZ.

04:34:30 11   THE COURT: THAT SOUNDS PERFECT.

04:34:32 12   THANK YOU.

04:34:32 13   **(THE VIDEO DEPOSITION OF GREG SATZ WAS PLAYED INTO THE**

04:36:07 14   **RECORD.)**

04:49:13 15   MR. VAN NEST: YOUR HONOR, THAT CONCLUDES THE VIDEO

04:49:15 16   FOR MR. SATZ, AND UNFORTUNATELY THIS MAY NOT BE TAKEN AS BAD

04:49:21 17   NEWS, WE MOVED A LITTLE MORE QUICKLY THIS AFTERNOON THAN I

04:49:24 18   THOUGHT, AND I DO NOT HAVE ANY OTHER LIVE WITNESSES. AND AS

04:49:28 19   YOUR HONOR KNOWS --

04:49:29 20   THE COURT: ALL RIGHT. CAN I EXCUSE THE JURY FOR THE

04:49:32 21   DAY?

04:49:32 22   MR. VAN NEST: CAN I MOVE ONE EXHIBIT FOR MR. SATZ,

04:49:35 23   MR. WONG REMINDED ME, INTO EVIDENCE. THAT WOULD BE TX 5146.

04:49:39 24   THAT'S THE ONE EXHIBIT THAT WAS SHOWN TO THE WITNESS

04:49:42 25   DURING THE EXAMINATION.

09:50:59 1   YOUR HONOR.

09:50:59 2   THE COURT: OKAY. THEN THOSE ARE IN.

09:51:01 3   MR. NELSON: THAT'S NOT WHAT I'M TALKING ABOUT.

09:51:03 4   THE COURT: OKAY.

09:51:03 5   MR. NELSON: I'M TALKING ABOUT ALL OF THE OTHER

09:51:05 6   THINGS THAT ARE OFFERED HERE.

09:51:06 7   THE COURT: SO WHAT REASONABLE OBJECTION DO YOU HAVE

09:51:08 8   TO THE AUTHENTICITY OF THE MANUALS?

09:51:12 9   MR. NELSON: THE REASONABLE OBJECTION I HAVE IS

09:51:13 10   REMEMBER, THEIR WHOLE CASES, WE GOT TWO DIFFERENT INDUSTRY

09:51:17 11   STANDARDS, AND I WILL PICK UP THE LATER ONE, THE ONE THAT'S

09:51:20 12   RELATED TO FAIR USE, NOT THEIR ORIGINALITY DEFENSE. SO THAT

09:51:23 13   ENTIRE THING IS BASED ON WHAT PEOPLE ARE ACTUALLY DOING.

09:51:27 14   WHAT APPEARS IN THE MANUALS IS NOT NECESSARILY WHAT PEOPLE

09:51:33 15   ARE DOING. THEY'VE MADE THAT CLEAR THROUGHOUT THE CASE.

09:51:35 16   AND IN FACT, THINK ABOUT THIS YOUR HONOR, WHAT IS WE HEARD

09:51:38 17   AND SAW YESTERDAY --

09:51:39 18   THE COURT: WHAT IS IN THEIR MANUAL IS NOT

09:51:42 19   NECESSARILY WHAT THEY ARE DOING?

09:51:43 20   MR. NELSON: MEANING IT'S NOT NECESSARILY WHAT'S

09:51:45 21   IMPLEMENTED IN THE PRODUCT. AND IT'S CERTAINLY NOT THE

09:51:48 22   TOTALITY OF WHAT'S IMPLEMENTED TO THE PRODUCT. SO WE DON'T

09:51:51 23   HAVE ANY TESTIMONY TO THAT EFFECT.

09:51:52 24   THE OTHER THING IS WE DON'T KNOW WHICH PRODUCTS THEY ARE

09:51:55 25   TALKING ABOUT OR WHETHER -- THE REPRESENTATION BEING MADE BY

09:51:58 1   DR. BLACK, IS THIS APPLIES TO ALL THE PRODUCTS THAT -- SO HE

09:52:02 2   WANTS TO SAY OH, I GOT A FEW DELL MANUALS FOR ONE OF THE

09:52:05 3   PRODUCTS AND THEREFORE DELL IS FOLLOWING WHAT THEY TERM TO BE

09:52:09 4   THE INDUSTRY STANDARD, WHATEVER THAT MIGHT BE.

09:52:10 5   THE COURT: WELL, THAT'S JUST A MATTER OF -- THAT'S

09:52:14 6   CROSS-EXAMINATION OF DR. BLACK'S TESTIMONY.

09:52:17 7   MR. NELSON: UNDERSTOOD, YOUR HONOR. I UNDERSTAND

09:52:20 8   THAT, ALTHOUGH THINK ABOUT WHAT WE ARE DOING HERE.

09:52:23 9   SO WE HAVE THEIR OWN STATEMENTS FOR THE FOUR -- THERE'S

09:52:30 10   BASICALLY, IN TERMS OF THE SUMMARY EXHIBIT, HE WANTS TO OFFER

09:52:32 11   TO THE JURY, AND I FORGET THE NUMBER, I WILL GET THAT FOR

09:52:35 12   YOUR HONOR, I THINK IT'S 9041, BUT REGARDLESS, SO HE HAS A LIST

09:52:40 13   OF COMMANDS, OVERLAPPING COMMANDS, AND PICKS BROCADE AND FOUR

09:52:46 14   OF THE JUNIPER OS-E, AND WE ALREADY HEARD THE CONFUSION WITH

09:52:50 15   JUNIPER OS, VERSUS OS-E, AND DELL AND EXTREME; RIGHT.

09:52:58 16   AND WE KNOW FROM THEIR OWN DOCUMENTATION THAT THEY

09:53:01 17   BELIEVE, MEANING ARISTA, BELIEVES AS OF 2010, THAT THOSE PEOPLE

09:53:07 18   DO NOT IMPLEMENT WHAT THEY CALL THE INDUSTRY STANDARD CLI.

09:53:11 19   SO DR. BLACK IS SIMPLY BRUSHING EVERYTHING ASIDE, RELYING

09:53:14 20   ON A FEW UNAUTHENTICATED MANUALS.

09:53:18 21   IN TERMS OF THE ONES PRODUCED TO SUBPOENA, I DON'T HAVE

09:53:21 22   ANY PROBLEM SEPARATING THOSE THINGS OUT. BUT INCLUDING IN THE

09:53:24 23   SUMMARY EXHIBIT THE ONES THAT THEY SIMPLY GOT OFF THE WEB AT

09:53:30 24   HIS DEPOSITION TESTIMONY WAS THAT THE LAWYERS HANDED THESE TO

09:53:32 25   HIM, RIGHT. THAT WOULD BE LIKE ME GOING TO WIKIPEDIA AND

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09:53:35  1    SAYING HEY, THIS IS AN ESTABLISHED FACT.  AND WE ALL KNOW

09:53:39  2    WIKIPEDIA IS NOT SO RELIABLE, RIGHT?

09:53:42  3             THE COURT:  WELL, BUT YOU'RE SUGGESTING THAT THERE'S

09:53:46  4    DOUBT THAT A PRODUCT MANUAL THAT IS POSTED ONLINE IS

09:53:51  5    INAUTHENTIC, THAT IT'S FAKE.

09:53:53  6             MR. NELSON:  WELL, THERE'S NO TESTIMONY THAT WHAT

09:53:56  7    WEBSITES -- DR. BLACK DOESN'T EVEN KNOW WHAT WEBSITES THEY CAME

09:54:00  8    FROM.

09:54:00  9             THE COURT:  WELL, I APPRECIATE THAT.

09:54:01 10             MR. NELSON:  THEY COULD COME FROM ANYTHING.  AND WHO

09:54:03 11    KNOWS WHO POSTED THESE THINGS, WHETHER THEY COME FROM

09:54:09 12    PARTICULAR PRODUCTS THAT WERE ACTUALLY OUT THERE IN THE

09:54:11 13    MARKETPLACE, WHAT THOSE PRODUCTS IMPLEMENTED.

09:54:11 14             THE COURT:  THE MANUALS DON'T TELL YOU THAT?

09:54:14 15             MR. NELSON:  NO, NO, NO --

09:54:15 16             THE COURT:  I MEAN --

09:54:16 17             MR. WONG:  HE SAID A LOT.  CAN I SAY SOMETHING?

09:54:19 18             THE COURT:  IT'S HARD TO IMAGINE, HERE'S A MANUAL AND

09:54:21 19    I'M NOT GOING TO TELL YOU WHAT PRODUCTS IT WORKS ON.

09:54:24 20             MR. NELSON:  I'M NOT SAYING WHAT PRODUCTS, I'M SAYING

09:54:26 21    DR. BLACK DOESN'T PROVIDE THAT INFORMATION.  DR. BLACK DOESN'T

09:54:29 22    EVER MAKE THAT CORRELATION.  HE SIMPLY SAYS, THIS IS RELEVANT

09:54:33 23    TO DELL.  DELL IS INDUSTRY STANDARD, RIGHT?

09:54:35 24             MR. WONG:  I DISAGREE.

09:54:36 25             MR. NELSON:  WELL, PLEASE, LET ME FINISH.
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10:13:32 1	MR. VAN NEST: WE ARE, YOUR HONOR.
10:13:33 2	AND AT THIS TIME ARISTA NETWORKS WOULD CALL JAYSHREE
10:13:36 3	ULLAL.
10:13:37 4	THE COURT: ALL RIGHT.
10:13:37 5	AND MS. ULLAL IS ALREADY IN THE COURTROOM.
10:13:39 6	MS. ULLAL IF YOU WOULD COME FORWARD TO THE WITNESS STAND,
10:13:42 7	PLEASE, AND STAND TO BE SWORN.
10:13:48 8	**(DEFENDANT'S WITNESS, JAYSHREE ULLAL, WAS SWORN.)**
10:13:48 9	THE WITNESS: YES.
10:14:02 10	THE CLERK: IF YOU WOULD PLEASE STATE YOUR NAME AND
10:14:07 11	SPELL YOUR LAST NAME FOR THE RECORD.
10:14:11 12	THE WITNESS: MY NAME IS JAYSHREE ULLAL. U-L-L-A-L.
10:14:23 13	MR. VAN NEST: GOOD MORNING, YOUR HONOR. GOOD
10:14:25 14	MORNING, EVERYONE.
10:14:22 15	**DIRECT EXAMINATION**
10:14:23 16	BY MR. VAN NEST:
10:14:26 17	Q. GOOD MORNING, MS. ULLAL.
10:14:27 18	A. GOOD MORNING, COUNSELOR.
10:14:31 19	Q. PLEASE INTRODUCE YOURSELF TO THE JURY.
10:14:33 20	A. MY NAME IS JAYSHREE ULLAL. I AM THE CEO AND PRESIDENT OF
10:14:38 21	ARISTA NETWORKS. I HAVE BEEN MARRIED FOR 32 YEARS. I HAVE TWO
10:14:42 22	LOVELY DAUGHTERS IN THEIR TWENTIES. AND I JUST RECENTLY BECAME
10:14:46 23	A MOTHER-IN-LAW TOO, SO I HAVE A NEW SON-IN-LAW.
10:14:49 24	Q. CAN YOU MOVE THAT MIC JUST A LITTLE BIT CLOSER?
10:14:53 25	THANK YOU.

10:28:47 1   DOMINATED BY ONE PLAYER. AND IT WAS A CLASSIC THREE-TIER

10:28:52 2   NETWORK, VERY MONOLITHIC SOFTWARE, AND THERE HADN'T BEEN MUCH

10:28:57 3   CHANGE.

10:28:58 4   SO WHAT ARISTA WAS SEEING IS THAT THERE WAS A NEW PARADIGM

10:29:04 5   OF SILICON, A NEW PARADIGM OF SOFTWARE. AND IN FACT, A NEW

10:29:08 6   CLASS IN PARADIGM OF CUSTOMERS THAT WANTED A CHANGE.

10:29:12 7   Q.   WHAT MARKET WERE YOU FOCUSSING ON?

10:29:15 8   A.   SO OUR GOAL WAS TO FOCUS ON THE CLOUD NETWORKING MARKET.

10:29:19 9   THIS WAS A NEW CLASS OF CLOUD PROVIDERS THAT WERE BUILDING

10:29:22 10   A NEW SCALE. YOU CAN THINK OF IT AS BASICALLY RATHER THAN

10:29:25 11   PUTTING NETWORKING IN THE DATA CENTER OR IN THE PREMISE, THEY

10:29:27 12   WERE TAKING IT INTO THE CLOUD, OFF THE PREMISE, SO THAT YOU CAN

10:29:33 13   CONSUME NETWORKING WITHOUT EACH COMPANY OR CUSTOMER HAVING TO

10:29:37 14   BUILD IT THEMSELVES.

10:29:37 15   Q.   WHAT WAS THE STATE -- WE'VE HEARD TESTIMONY FROM A NUMBER

10:29:40 16   OF WITNESSES ABOUT THE CLOUD MARKET, BUT LET'S GO BACK TO 2008.

10:29:44 17   WAS THERE A RECOGNIZED CLOUD MARKET THEN?

10:29:46 18   A.   NO, NOT AT ALL, IT WAS NEARLY A STATED VISION AND

10:29:49 19   DIRECTION ON MY PART AND MY COMPANY'S PART. BUT WE HAD A

10:29:55 20   BELIEF THAT THIS WAS A REALLY SIGNIFICANT MARKET. YOU HAD TO

10:29:59 21   LOOK REALLY AROUND THE BEND TO SEE IT, BECAUSE IT WASN'T THERE

10:30:01 22   AND IT WASN'T THERE FOR A LONG TIME. I THINK THE ACTUAL MARKET

10:30:04 23   FOR SOFTWARE-DRIVEN CLOUD MARKETING REALLY STARTED HAPPENING IN

10:30:10 24   2011, 2012.

10:30:11 25   Q.   AND BACK THEN IN '08, '09, WHAT DID YOU SEE AS THE KEY

10:30:15 1   FACTORS FOR SUCCESS IN THE CLOUD?

10:30:17 2   A.   YEAH.   THE FACTORS WERE VERY CLEAR.   FIRST OF ALL, IT WAS

10:30:21 3   SCALE.   YOU KNOW, WHEN YOU LOOK ON THE PREMISE YOU GENERALLY

10:30:24 4   THINK OF TEN SERVERS OR 100 SERVERS.   OVER HERE WE THOUGHT OF

10:30:29 5   SERVERS THAT ARE HUNDREDS OF THOUSANDS OR BILLION VIRTUAL

10:30:34 6   MACHINES OR TERABYTES OF STORAGE.   IT WAS LIKE AN ORDER OF

10:30:37 7   MAGNITUDE GREATER THAN ANYTHING YOU HAD NORMALLY SEEN BEFORE.

10:30:41 8   THE OTHER THING WAS HIGH AVAILABILITY.   THE DEFINITION OF

10:30:43 9   HIGH AVAILABILITY AT TRADITIONAL ENTERPRISE MARKET WAS IF ONE

10:30:47 10 FAILS, YOU SWAP OVER TO THE OTHER.   BUT THE HIGH AVAILABILITY

10:30:50 11 REQUIREMENTS IN THE CLOUD WERE MUCH MORE STRENUOUS.   YOU NEEDED

10:30:54 12 AUTOMATIC RECOVERY, YOU NEEDED INSTANT RECOVERY IN, YOU KNOW,

10:30:58 13 SUBSECONDS, NOT MINUTES.

10:31:01 14   THERE WAS ALSO LATENCY, HOW FAST CAN YOU MOVE A PACKET.

10:31:05 15 AND HOW QUICKLY CAN YOU GET THERE.   AND IN FACT, THAT'S THE

10:31:08 16 MARKET WE TURN TO BECAUSE THE CLOUD WASN'T THERE AND READY.

10:31:13 17 Q.   LET ME FOLLOW UP ON THAT A LITTLE BIT.   YOU MENTIONED

10:31:16 18 AVAILABILITY, IS THAT RELATED TO RELIABILITY?

10:31:18 19 A.   YEAH, VERY MUCH SO.   IT'S A FORM OF UPGRADING THE NETWORK

10:31:24 20 REALTIME.   YOU CAN THINK OF THIS LIKE CHRISTMAS TREE LIGHTS.

10:31:28 21 DURING THE HOLIDAY SEASON HERE, IF ONE LIGHT FAILS, THE ENTIRE

10:31:34 22 CHRISTMAS TREE LIGHT GOES ON AND THAT'S TYPICALLY HOW

10:31:37 23 NETWORKING WAS DONE.   IN THE ARISTA ARCHITECTURE, IF ONE LIGHT

10:31:40 24 FAILS FIRST, OF ALL THE REST OF THE LIGHTS STAY UP, ONLY THAT

10:31:43 25 ONE LIGHT FAILS.   BUT MORE IMPORTANTLY, WE EVEN HAVE MECHANISMS

10:31:48	1	TO COVER THAT LIGHT AND FIX THAT LIGHT AND REPAIR IT.
10:31:51	2	SO THAT KIND OF HIGH AVAILABILITY WASN'T SEEN BEFORE. IT
10:31:54	3	WAS AVAILABLE IN THE INDUSTRY AND UNIX SYSTEMS, BUT NEVER IN
10:31:58	4	NETWORKING.
10:31:59	5	Q. YOU ALSO MENTIONED LOW LATENCY. IS THAT RELATED TO SPEED?
10:32:03	6	A. YES, IT IS RELATED TO SPEED.
10:32:04	7	Q. WHAT DOES IT MEAN?
10:32:06	8	A. IT MEANS -- SORRY, I TALK TECH JARGON A BIT MUCH. IT
10:32:10	9	MEANS IF I SEND A PACKET OR I SEND INFORMATION FROM ONE
10:32:14	10	DESTINATION TO THE OTHER, TRADITIONALLY YOU CAN TAKE
10:32:18	11	FIVE-MINUTES OR YOU CAN TAKE FIVE SECONDS. IN THE CASE OF
10:32:22	12	ARISTA, WE TOOK 500 NANOSECONDS, LITERALLY 1/100TH AT A TIME.
10:32:27	13	AND HOW FAST YOU MOVE A PACKET, WE FOUND A VERY EXCITING
10:32:31	14	NEWS CASE IN ALGORITHMIC TRADING, HIGH FREQUENCY TRADERS.
10:32:36	15	WHEN YOU DO TRADING, EVERY NANOSECOND MATTERS. AND EVERY
10:32:39	16	NANOSECOND TRANSLATES TO SAVING DOLLARS FOR BANKERS AND
10:32:43	17	ALGORITHMIC TRADERS.
10:32:44	18	AND SO ALTHOUGH THE CLOUD DIDN'T HAPPEN RIGHT AWAY,
10:32:48	19	ARISTA'S IMMEDIATE SUCCESS BECAME THE HIGH FREQUENCY TRADING
10:32:51	20	AND FINANCIAL BANKS.
10:32:52	21	Q. OKAY. SO TELL US HOW, GIVEN THOSE REQUIREMENTS, IN THE
10:32:55	22	CLOUD, HOW DID ARISTA GO ABOUT DESIGNING A SWITCH FOR THE
10:32:59	23	CLOUD, HOW DID YOU GO ABOUT DOING THAT?
10:33:01	24	A. WE REALLY LOOKED AT THIS PROBLEM IN PROBABLY THREE PARTS.
10:33:08	25	THE FIRST WAS WHAT KIND OF SYSTEM ARCHITECTURE DO WE NEED.

10:33:13 1   AND IF YOU LOOKED AT TRADITIONAL ARCHITECTURES, THEY WERE ALL

10:33:15 2   CLOSED BOXES, BLACK BOXES. AND THEY WERE BUILT OUT OF CUSTOM

10:33:20 3   ASICS. AND ARISTA'S APPROACH WAS WE DON'T HAVE TO BUILD THE

10:33:24 4   ASICS, WE ARE GOING TO ADOPT MERCHANT SILICON.

10:33:27 5   WE CHOSE COMPANIES, INITIALLY STARTUP COMPANIES LIKE

10:33:33 6   FULCRUM AND BROADCOM. AND AT ANY GIVEN TIME WE FOUND THESE

10:33:36 7   SILICON WAS 1/5TH THE POWER, FIVE TIMES THE PERFORMANCE, AND

10:33:39 8   THREE TO FIVE TIMES THE POWER, THE DENSITY AS WELL.

10:33:42 9   Q.   NOW LET ME JUST STOP YOU THERE, MS. ULLAL. YOU USED A

10:33:45 10   COUPLE OF TERMS, ASICS AND MERCHANT SILICON.

10:33:49 11   TELL THE JURORS WHAT'S THE DIFFERENCE BETWEEN A CUSTOM

10:33:54 12   ASIC AND MERCHANT SILICON?

10:33:54 13   A.   A CUSTOM ASIC IS TYPICALLY ONE THAT'S BUILT IN A

10:33:57 14   PROPRIETARY FASHION BY THE COMPANY USING THEIR OWN DESIGN

10:34:02 15   METHODOLOGIES THAT ARE ALL PROCESSED.

10:34:03 16   A MERCHANT SILICON IS ONE THAT'S AVAILABLE FOR THE BROAD

10:34:07 17   MARKET, AND GENERALLY IT RELIES ON A MORE AGGRESSIVE

10:34:10 18   SEMICONDUCTOR PROCESS. THEY USE MORE AGGRESSIVE GEOMETRIES.

10:34:14 19   AND THEIR EXPERTISE IS SILICON, SO THEY DON'T VERTICALLY CREATE

10:34:20 20   THIS, THEY HORIZONTALLY PROVIDE CHIPS TO A VARIETY OF CUSTOMERS

10:34:22 21   IN THE MARKETPLACE.

10:34:23 22   Q.   YOU MENTIONED THREE FACTORS, YOU'VE COVERED THE SILICON;

10:34:27 23   WHAT WERE THE OTHER FACTORS THAT YOU --

10:34:30 24   A.   THE ONE THAT WAS FASCINATING AND VERY EXCITING AS I

10:34:33 25   MENTIONED BEFORE, IT WAS OUR EXTENSIBLE OPERATING SYSTEM, THE

10:34:36 1   EOS. AND I HAD NEVER SEEN ANYTHING LIKE THIS BEFORE.

10:34:39 2   AND IN NETWORKING, THERE'S PROBABLY ONLY BEEN THREE MAJOR

10:34:43 3   OPERATING SYSTEMS. AND I'VE TALKED ABOUT THIS IN BLOGS, IN THE

10:34:46 4   ENTERPRISE WORLD, I RESPECT CISCO A LOT FOR THEIR OPERATING

10:34:49 5   SYSTEMS, WHETHER IT'S IOS OR VARIOUS FLAVORS OF THAT. IN THE

10:34:53 6   SERVICE PROVIDER WORLD, IT'S BEEN JUNIPER. AND IN THE CLOUD

10:34:56 7   OPERATOR WORLD, IT'S BEEN ARISTA.

10:34:58 8   EOS WAS THE ONLY SYSTEM I SAW THAT HAD THE STATE DRIVEN

10:35:03 9   PROGRAMMABILITY THAT NO OTHER OPERATING SYSTEM HAS LIVED UP TO

10:35:06 10   TODAY.

10:35:07 11   Q.   AND WHY IS THAT IMPORTANT?

10:35:09 12   A.   IT'S VERY IMPORTANT BECAUSE, AS I SAID, IN THE CLOUD YOU

10:35:13 13   ARE DEALING WITH HUNDREDS AND THOUSANDS OF MACHINES. AND YOU

10:35:16 14   NEED THE FLEXIBILITY OF SCALING BETWEEN THOSE MACHINES AND THE

10:35:20 15   TRAFFIC WAS MOVING RAPIDLY FROM CLIENT-SERVER TO SERVER-SERVER.

10:35:26 16   SERVER TO SERVER, NOT SOUTH, BUT TO EAST-WEST.

10:35:29 17   AND WHAT I MEAN BY THAT IS IF YOU LOOK AT SOCIAL

10:35:32 18   NETWORKING LIKE FACEBOOK, BEHIND THAT USER EXPERIENCE, ARE

10:35:36 19   HUNDREDS AND THOUSANDS OF SERVERS THAT ARE IMPROVING YOUR

10:35:39 20   EXPERIENCE MAKING SURE YOU LOAD THE PAGES CORRECTLY, LOAD THE

10:35:43 21   PHOTOS CORRECTLY, LOAD YOUR LIKES AND DISLIKES CORRECTLY AND

10:35:46 22   ALL OF THAT TAKES A MASSIVE AMOUNT OF COMPUTING AND NETWORKING

10:35:50 23   POWER, BUT ALSO PROGRAMMABILITY.

10:35:52 24   YOU HAVE TO TUNE IT SO THAT THE RESPONSES CAN BE

10:35:58 25   CUSTOMIZED FOR EACH OF THE CASES.

10:36:00 1   Q.   AND WHY IS PROGRAMMABILITY AND CUSTOMIZABILITY IMPORTANT?

10:36:05 2   A.   BECAUSE THE REALITY IS THAT YOU CAN DELIVER SPEEDS AND

10:36:11 3   PERFORMANCE, BUT YOU ALSO HAVE TO BE AWARE OF THE TRAFFIC AND

10:36:14 4   HOW YOU CUSTOMIZE THAT FEED AND SPEED.

10:36:18 5   AND SO ARISTA'S REAL ADVANTAGE WAS OUR CUSTOMERS WERE ABLE

10:36:22 6   TO CUSTOMIZE OUR OPERATING SYSTEM, AND ALL THE OPERATING SYSTEM

10:36:26 7   LIKE IT WAS LITERALLY THEIRS, IT WAS OPEN, IT WASN'T A BLACK

10:36:29 8   BOX. THEY COULD WRITE SCRIPTS TO IT, THEY COULD DEVELOP

10:36:33 9   APPLICATIONS ON TOP OF IT. IT WAS AS MUCH THEIR OPERATING

10:36:36 10   SYSTEM AS IT WAS OURS.

10:36:37 11   Q.   CAN YOU TELL US HOW MANY LINES OF SOURCE CODE THERE ARE IN

10:36:42 12   THE EOS OPERATING SYSTEM?

10:36:44 13   A.   SURE. INITIALLY, IT WAS SMALL. WHEN I FIRST CAME IN, I

10:36:49 14   THINK IT WAS A MILLION OR A COUPLE OF MILLION LINES IN 2008.

10:36:53 15   AND TODAY, IT'S WELL OVER 10 MILLION LINES.

10:36:56 16   Q.   AND HOW MANY ENGINEERS WORK AT ARISTA TODAY?

10:37:00 17   A.   AGAIN, WHEN I JOINED, IT WAS PROBABLY 30 ENGINEERS, AND

10:37:04 18   TODAY I WOULD SAY OVER A THOUSAND.

10:37:06 19   Q.   AND HOW MANY EMPLOYEES -- THAT'S A THOUSAND ENGINEERS OUT

10:37:09 20   OF HOW MANY TOTAL EMPLOYEES IN THE COMPANY?

10:37:12 21   A.   THE TOTAL, APPROXIMATELY 1500.

10:37:15 22   Q.   DOES ARISTA, IN ORDER TO GET THESE THINGS DONE, DOES

10:37:18 23   ARISTA DEDICATED A LOT OF RESOURCES TO RESEARCH AND

10:37:21 24   DEVELOPMENT?

10:37:21 25   A.   YES, INDEED, IT'S ONE OF OUR HALLMARKS.

10:37:25 1   IF YOU GENERALLY LOOK AT CORPORATIONS, THEY WOULD

10:37:27 2   DEDICATE, YOU KNOW, MAYBE FIVE TO NINE, MAYBE TEN PERCENT OF

10:37:31 3   THEIR REVENUE TO R&D.

10:37:33 4   ARISTA'S WAS CONSISTENTLY DOUBLE DIGITS, IN THE TWENTIES.

10:37:38 5   WE TENDED TO DO, YOU KNOW, TWO TO THREE TIMES MORE AS A

10:37:41 6   PERCENTAGE OF REVENUE IN R&D.

10:37:43 7   AND WE REALLY ARE A COMPANY BUILT BY ENGINEERS FOR

10:37:46 8   ENGINEERS. THAT'S OUR HALLMARK. WE HAVEN'T THROWN A LOT OF

10:37:49 9   INVESTMENT INTO SALES AND MARKETING, THAT'S NOT OUR FORTE, BUT

10:37:54 10   OUR FORTE IS VERY MUCH ENGINEERING.

10:37:57 11   Q.   MS. ULLAL, WHEN DID ARISTA RELEASE ITS FIRST PRODUCT?

10:38:02 12   A.   IN; RIGHT ABOUT THE TIME I CAME, SO THAT WOULD BE FALL OF

10:38:05 13   2008.

10:38:06 14   Q.   OKAY. AND WHAT PRODUCT WAS THAT?

10:38:07 15   A.   THAT WAS THE 7124 LOW LATENCY SWITCH.

10:38:12 16   Q.   AND CAN YOU GIVE THE JURORS JUST A BRIEF DESCRIPTION OF

10:38:15 17   WHAT CAPABILITY THAT HAD, IS THAT A CLOUD TYPE OF SWITCH OR

10:38:19 18   WHAT IS IT?

10:38:20 19   A.   NO, IT ISN'T. IN FACT, WHILE WE WERE WAITING FOR THE

10:38:23 20   CLOUD TO HAPPEN, WE INTRODUCED A ONE-RACK UNIT, 24-PORT 10

10:38:28 21   GIGABIT ETHERNET SWITCH. AND IT WAS THE HIGHEST DENSITY IN A

10:38:32 22   ONE-RACK UNIT. THERE WAS A 24 AND A 48, WHERE WE CRAMMED MORE

10:38:37 23   PORTS THAN ANYONE ELSE COULD. AND IT WAS THE ABSOLUTE LOWEST

10:38:41 24   LATENCY BY FACTOR OF TEN.

10:38:43 25   THE GENERAL PRODUCTS, ETHERNET PRODUCTS IN THE MARKET

10:38:45 1   WERE, YOU KNOW, THREE TO FOUR MILLISECONDS, AND ARISTA WAS 500

10:38:49 2   NANOSECONDS. WE WENT ON TO DO 250 NANOSECONDS AS WELL, BUT THE

10:38:55 3   FIRST ONE WAS 500.

10:38:57 4   Q.   SO WHO WERE THE EARLY CUSTOMERS OF ARISTA THAT WERE

10:38:59 5   INTERESTED IN THAT PRODUCT?

10:39:00 6   A.   WELL, THIS IS A LITTLE BIT IRONIC, BUT BECAUSE MY VERY

10:39:06 7   FIRST WEEK THAT I ARRIVED AT THE COMPANY, ONE OF OUR FIRST

10:39:09 8   CUSTOMERS WAS LEHMAN BROTHERS. IT WAS A BAD OMEN BECAUSE WE

10:39:13 9   ACQUIRED THE CUSTOMER. AND THEN IF YOU REMEMBER, LEHMAN

10:39:17 10   BROTHERS WENT BANKRUPT AFTER THAT. SO IT WAS NOT A GREAT START

10:39:20 11   TO MY CAREER AS A CEO.

10:39:22 12   BUT THE TYPE OF CUSTOMERS WE HAD WERE VERY HIGH FREQUENCY

10:39:25 13   TRADERS, LARGE BANKS, SMALL BANKS, ALGORITHMIC TRADERS.

10:39:29 14   WE WENT ON TO ACQUIRE A HUNDRED OF THEM, AND WE WERE THE

10:39:31 15   MARKET LEADER OR THE DE FACTO LEADER FOR HIGH FREQUENCY

10:39:35 16   TRADING, LOW LATENCY ETHERNET.

10:39:37 17   Q.   AND WHAT BENEFIT WERE THEY LOOKING FOR IN YOUR PRODUCTS?

10:39:40 18   A.   FASTEST SPEED, LOWEST LATENCY, AND ALSO VERY RELIABLE,

10:39:45 19   HIGH QUALITY SOFTWARE. THEY WANTED SOMETHING THAT JUST WORKED.

10:39:48 20   AND THE AMOUNT OF FEEDBACK I GOT ON THE STABILITY AND QUALITY

10:39:52 21   OF OUR SOFTWARE WAS AS HIGH AS THE LOW LATENCY OF OUR PRODUCTS.

10:39:56 22   Q.   CAN YOU OPEN YOUR BINDER TO ARISTA TX 7790, MS. ULLAL.

10:40:08 23   AND TELL US WHETHER YOU RECOGNIZE THAT?

10:40:11 24   A.   YES, I DO.

10:40:12 25   Q.   WHAT IS IT?

10:43:01 1   FULLY HIGH PERFORMANCE NON -- FULL WIRE RATE PERFORMANCE, NOT

10:43:08 2   OVER SUBSCRIBED. AND ARISTA WAS DOING 384 PORTS.

10:43:11 3   Q.   384 PORTS.

10:43:13 4   AND YOU SAID LOW POWER. WHAT DO YOU MEAN?

10:43:16 5   A.   WHEN YOU LOOK AT THE TYPICAL POWER OF PRODUCTS AT THAT

10:43:18 6   TIME, THEY ENDED UP BEING ANYWHERE FROM 60 TO 100 WATTS.

10:43:26 7   ARISTA'S WAS 2 TO 5 WATTS PER PORT.

10:43:31 8   Q.   AND WHY IS THAT SIGNIFICANT TO THE CUSTOMER?

10:43:33 9   A.   IT'S SIGNIFICANT NOT JUST IN A PORT BASIS, BUT WHEN YOU

10:43:36 10   ARE IN A DATA CENTER AND YOU ARE AGGREGATING ALL THOSE PORTS,

10:43:41 11   YOU HAVE TO PUT IN THE RIGHT CAPACITY, THE COOLING TO MAKE THE

10:43:44 12   DATA CENTER RUN.

10:43:45 13   THE COST OF THAT SOMETIMES CAN BE FAR GREATER THAN THE

10:43:47 14   NETWORKING GEAR. SO THE COST OF COOLING AND POWER CAN GO INTO

10:43:50 15   THE MULTI MILLION DOLLARS. SO ARISTA WAS SAVING THEM MILLIONS

10:43:54 16   OF OPERATIONAL DOLLARS BY VIRTUE OF THESE KIND OF DRAMATIC

10:43:59 17   POWER.

10:43:59 18   Q.   NOW WHAT KINDS OF COMPANIES BUY THIS SWITCH? WHO WERE THE

10:44:02 19   CLOUD CUSTOMERS?

10:44:04 20   A.   AS WE MOVED INTO THE SPINE, THE FIRST FEW YEARS WAS MORE

10:44:07 21   FINANCIAL.

10:44:08 22   Q.   SLOW DOWN JUST A LITTLE BIT, MS. ULLAL, BECAUSE WE ARE

10:44:11 23   TRYING TO RECORD EVERY WORD YOU SAY. THANK YOU.

10:44:13 24   A.   THANK YOU.

10:44:15 25   AS WE MOVED INTO THE SPINE, THE CLASS OF OUR CUSTOMERS

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10:44:20  1    BECAME VERY DIFFERENT.  THESE ARE CUSTOMERS WHERE NETWORKING

10:44:25  2    WAS CHANGING THEIR PRODUCTS, AND THEY WERE BUILDING CLOUDS.

10:44:31  3         SO YOU CAN -- WE CALL THEM THE CLOUD PROVIDERS OR THE

10:44:35  4    CLOUD TITANS, EXAMPLES OF THAT WOULD BE MICROSOFT, FACEBOOK,

10:44:40  5    EBAY, YAHOO, GOOGLE, AMAZON, APPLE, THESE ARE THE CLASS OF

10:44:47  6    CUSTOMERS.  AND THEY WERE REALLY PUSHING THE ENVELOPE OF SCALE.

10:44:50  7         OTHER EXAMPLES OF THAT WOULD BE SERVICE PROVIDERS WHO ARE

10:44:53  8    BRINGING IN THE NEW STREAMING AND PERFORMANCE INTO YOUR HOMES

10:44:57  9    LIKE NETFLIX AND COMCAST.  AND OF COURSE, OTHERS WOULD BE LIKE

10:45:00  10   WE DISCUSSED EARLIER, LARGE BANKS AS WELL.

10:45:03  11        SO THE CLASS OF CUSTOMERS, THE COMMON THREAD ACROSS ALL OF

10:45:06  12   THEM WAS THEY WANTED TO BUILD HIGH PERFORMANCE SOFTWARE DRIVEN

10:45:10  13   CLOUD NETWORKING, BUT THEY WERE PUSHING THE ENVELOPE OF SCALE

10:45:13  14   AND PROGRAMMABILITY.

10:45:13  15   Q.   NOW ARE ALL THE COMPANIES YOU LISTED IN YOUR ANSWER ARISTA

10:45:17  16   CUSTOMERS?

10:45:17  17   A.   SOME OF THEM I'M NOT ABLE TO REFER TO AS ARISTA CUSTOMERS.

10:45:21  18   Q.   AH, FAIR ENOUGH.

10:45:22  19   A.   BUT-MOST OF THEM ARE.

10:45:25  20   Q.   SO HAS THE PRODUCT, THIS PRODUCT, WON AWARDS IN THE

10:45:29  21   MARKETPLACE?

10:45:29  22   A.   IT DID.

10:45:31  23   Q.   WHAT WERE SOME OF THOSE?

10:45:34  24   A.   ONE OF THE MOST FUN MEMORIES I HAVE OF WINNING AWARDS IS

10:45:40  25   THERE'S A SHOW CALLED INTEROP WHICH IS THE MOST COMMON
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10:45:43 1   NETWORKING SHOW FOR ENTERPRISE, GENERALLY SPEAKING, NOT YOUR

10:45:48 2   CLOUD.

10:45:49 3   AND ARISTA WON THE AWARD FOR BEST OF SHOW WITH THE 7500

10:45:54 4   TWICE, BOTH IN 2010 AND IN 2013. IT'S RARE ENOUGH TO WIN IT

10:45:58 5   ONCE, AND GENERALLY ENTERPRISE PRODUCTS WIN IT, BUT TO WIN IT

10:46:02 6   TWICE WAS A REAL HONOR.

10:46:03 7   Q.   DID INDUSTRY GROUPS TEST THE ARISTA SWITCH AGAINST CISCO

10:46:09 8   AND OTHER COMPETITORS?

10:46:11 9   A.   SURE, THEY WERE. THERE WERE A LOT OF INDEPENDENT TESTS.

10:46:16 10   Q.   COULD WE PULL UP TX 5146, IT'S IN EVIDENCE.

10:46:20 11   YOU CAN SEE IT ON THE SCREEN, MS. ULLAL, IF WE COULD PUT

10:46:23 12   THE FIRST PAGE UP.

10:46:25 13   CAN YOU DESCRIBE FOR THE JURY, IT'S IN YOUR BOOK, BUT IT'S

10:46:28 14   ALSO ON THE SCREEN. TELL THE JURY WHAT THIS IS.

10:46:30 15   A.   THIS IS NOT THE 7500, THIS IS THE FIRST PRODUCT, THE 7124.

10:46:36 16   AND IT IS JANUARY OF 2010. THIS WAS PROBABLY ONE OF THE FIRST

10:46:41 17   PUBLISHED INDEPENDENT TESTS ON ARISTA PRODUCTS VERSUS OTHER

10:46:47 18   PEERS IN THE INDUSTRY, WHICH INCLUDED CISCO, HP, DELL, FORCE10,

10:46:52 19   IBM, AND EXTREME.

10:46:54 20   Q.   WAS -- WHAT WAS THE OUTCOME OF THE TEST?

10:46:58 21   A.   AS YOU CAN SEE WE WON THE TOP SPOT ALONG WITH BLADE

10:47:02 22   NETWORKS, AND IT WAS A VERY GRUELLING PERFORMANCE TEST AND

10:47:05 23   REALLY EXPOSED THE WEAKNESSES OF OUR COMPETITORS AS WELL.

10:47:09 24   Q.   WAS THIS AN IMPORTANT MILESTONE IN ARISTA'S HISTORY?

10:47:12 25   A.   YES, VERY MUCH SO. WE WERE A YOUNG COMPANY, AND OUR

10:48:39 1   YOUR HONOR.

10:48:40 2   MR. PAK: NO OBJECTION, YOUR HONOR.

10:48:41 3   THE COURT: IT WILL BE ADMITTED.

10:48:42 4   (DEFENDANT'S EXHIBIT 8203 WAS ADMITTED INTO EVIDENCE.)

10:48:42 5   BY MR. VAN NEST:

10:48:43 6   Q.   COULD WE DISPLAY IT SO THE JURORS GET AN IDEA. WE KNOW

10:48:46 7   WHO THAT IS ON THE LEFT. WHO IS ON THE RIGHT?

10:48:47 8   A.   ON THE LEFT IS ME. ON THE RIGHT IS ANDY BECHTOLSHEIM.

10:48:50 9   HE'S A LEGEND IN THE VALLEY. HE FOUNDED SUN AND HE FOUNDED

10:48:54 10   ARISTA. AND HE'S -- HE'S JUST A BRILLIANT ENGINEER.

10:49:00 11   Q.   MS. ULLAL, DOES ARISTA RESPECT THE INTELLECTUAL PROPERTY

10:49:05 12   OF OTHER COMPANIES?

10:49:06 13   A.   OF COURSE, CERTAINLY WE DO.

10:49:08 14   Q.   AND DOES ARISTA DO ANYTHING TO COMMUNICATE THAT RESPECT TO

10:49:12 15   ITS EMPLOYEES?

10:49:13 16   A.   WE DO. WE HAVE EVERY EMPLOYEE SIGN A CODE OF CONDUCT IN

10:49:19 17   AN INVENTIONS AGREEMENT. I THINK WE HAVE BEEN DOING THAT FOR

10:49:23 18   SEVERAL YEARS. AND WE INSIST THAT IF SOMEBODY COMES FROM

10:49:29 19   ANOTHER COMPANY, THAT THEY DO WANT BRING ANY OF THEIR

10:49:33 20   INTELLECTUAL PROPERTY, AND THAT IF THEY USE ANY OPEN SOURCE

10:49:37 21   LICENSES, THAT WE HAVE THE RIGHT MECHANISMS TO LICENSE THEM OR

10:49:40 22   ADOPT THEM.

10:49:41 23   SO WE HAVE THIS ALL VERY WELL DOCUMENTED. BOTH ANDY AND I

10:49:44 24   HAD REVIEWED THIS DOCUMENT MANY TIMES OVER THE YEARS AND

10:49:46 25   IMPROVED IT.

10:49:47 1   Q.   WOULD YOU OPEN YOUR BINDER TO TX 9069, PLEASE.

10:49:54 2   A.   TX --

10:49:56 3   Q.   AND TELL US WHETHER YOU RECOGNIZE THAT.

10:50:03 4   A.   YES, THIS IS ARISTA'S CODE OF BUSINESS CONDUCT.

10:50:07 5   MR. VAN NEST: YOUR HONOR, I WOULD OFFER TX 9069 IN

10:50:10 6   EVIDENCE.

10:50:10 7   MR. PAK: NO OBJECTION YOUR HONOR.

10:50:11 8   THE COURT: IT WILL BE ADMITTED.

10:50:13 9   (DEFENDANT'S EXHIBIT 9069 WAS ADMITTED INTO EVIDENCE.)

10:50:13 10   BY MR. VAN NEST:

10:50:13 11   Q.   COULD WE PUT ON THE SCREEN THE FIRST PAGE, THE TITLE AND

10:50:17 12   THE DATE.

10:50:18 13   WHEN WAS THIS PUBLISHED?

10:50:20 14   A.   OCTOBER OF 2010.

10:50:23 15   Q.   AND JUST GIVE THE JURY A BRIEF DESCRIPTION OF WHAT SORT OF

10:50:26 16   INFORMATION IS SET FORTH IN THIS DOCUMENT?

10:50:29 17   A.   WELL, BASICALLY ARISTA PROVIDES A SET OF GUIDELINES FOR

10:50:33 18   EVERY EMPLOYEE ON HOW TO SELF-MANAGE THEMSELVES AND HOW TO

10:50:37 19   UNDERSTAND OUR CODE OF ETHICS AND WHAT'S TOLERATED AND WHAT'S

10:50:41 20   NOT.

10:50:41 21   AND WE WANT PEOPLE, YOU KNOW, THERE'S THE POLICY ASPECT OF

10:50:48 22   IT AND THEN THERE'S THE CULTURAL ASPECT OF IT. FROM A POLICY

10:50:54 23   ASPECT, WE WANTED PEOPLE TO FULLY COMPLY WITH THE LAW. AND THE

10:50:58 24   CULTURAL ASPECT OF IT IS, WE WANT YOU TO RESPECT ONE ANOTHER

10:51:03 25   AND RESPECT EACH OTHER, AND WHEN IN DOUBT, CHECK WITH THE HR

10:51:07 1   DEPARTMENT AND MAKE SURE YOU ARE ON THE RIGHT TRACK.

10:51:10 2   Q.   AND COULD WE HAVE, MR. DAHM, FROM PAGE 10, THERE'S A

10:51:14 3   PARAGRAPH UNDER THE TITLE "INTELLECTUAL PROPERTY." COULD WE

10:51:18 4   HAVE THAT ON THE SCREEN, PLEASE.

10:51:23 5   BLOW IT ALL UP, THE SECOND PARAGRAPH, IN PARTICULAR.

10:51:26 6   LET'S BLOW THAT SECOND PARAGRAPH UP.

10:51:27 7   MS. ULLAL, TELL THE JURORS WHAT THE CODE OF CONDUCT SAYS

10:51:32 8   HERE WITH RESPECT TO INTELLECTUAL PROPERTY.

10:51:34 9   A.   "WE RESPECT THE INTELLECTUAL PROPERTY OF OTHERS. ARISTA

10:51:36 10   WILL PROVIDE SOFTWARE NECESSARY FOR EMPLOYEES TO PERFORM THEIR

10:51:39 11   FUNCTIONS ADEQUATELY UNDER APPROPRIATE LICENSING AGREEMENTS

10:51:43 12   WITH VENDORS. IT IS AGAINST ARISTA POLICY TO USE, COPY,

10:51:47 13   DISPLAY, OR DISTRIBUTE THIRD-PARTY COPYRIGHTED SOFTWARE,

10:51:51 14   DOCUMENTATION OR OTHER MATERIALS WITHOUT PERMISSION. YOU ARE

10:51:53 15   NOT PERMITTED TO USE SOFTWARE OR DOCUMENTATION EXCEPT TO THE

10:51:57 16   EXTENT THAT APPLICABLE LICENSE AGREEMENTS ALLOW."

10:52:01 17   Q.   AND HAS THAT BEEN THE POLICY AT ARISTA SINCE YOU'VE BEEN

10:52:05 18   THE CEO?

10:52:06 19   A.   ABSOLUTELY.

10:52:07 20   Q.   DOES ARISTA TOLERATE PLAGIARISM BY ITS EMPLOYEES?

10:52:11 21   A.   ABSOLUTELY NOT.

10:52:13 22   Q.   NOW WE'VE HEARD TESTIMONY AND DISCUSSION ABOUT THE FACT

10:52:16 23   THAT WHEN THE LAWSUIT WAS FILED, THERE WAS A CONTENTION THAT

10:52:20 24   SOME USER MANUALS WERE COPIED. WHAT DID YOU LEARN ABOUT THAT?

10:52:25 25   A.   YOU KNOW, I HEARD ABOUT IT FOR THE FIRST TIME WHEN THE

10:55:43	1	WAS NO SECRET. WE SPOKE ABOUT IT EVERY OPPORTUNITY WE GOT,
10:55:49	2	EVERY TIME WE TALKED, WE TOLD THEM WHERE WE DIFFERENTIATED AND
10:55:52	3	WHERE WE COMMUNICATED LIKE OTHERS.
10:55:54	4	Q. SO WAS THIS STATEMENT ANYTHING NEW THAT YOU HADN'T SAID
10:55:57	5	BEFORE?
10:55:57	6	A. NO, I WAS JUST MAKING A POINT THAT THERE'S NO INVENTION IN
10:56:01	7	THE STANDARD LANGUAGE OF NETWORKING, WHICH IS CLI, AND WE WERE
10:56:06	8	ADOPTING THE SAME.
10:56:06	9	Q. AND WHAT DID YOU MEAN WHERE YOU SAID "WHERE WE DON'T HAVE
10:56:09	10	TO INVENT, WE DON'T?"
10:56:10	11	A. MY POINT WAS WE USE OPEN SOURCE LINUX, WE USE INDUSTRY
10:56:15	12	STANDARD CLI, AND THESE ARE NOT ARISTA INVENTIONS, THESE COME
10:56:17	13	FROM THE INDUSTRY AND WE ADOPT THEM AS WELL.
10:56:20	14	Q. AND COULD WE GO BACK TO THE COVER OF THIS DOCUMENT.
10:56:26	15	WHAT'S THE DATE OF THIS INTERVIEW, MS. ULLAL?
10:56:30	16	A. FEBRUARY 2013.
10:56:33	17	Q. OKAY. SO THAT WAS ALMOST TWO YEARS BEFORE THE LAWSUIT WAS
10:56:37	18	FILED?
10:56:39	19	A. YEAH. I'M SURE I SAID IT IN 2012, '11, '10, '09, '08 AS
10:56:46	20	WELL. IF YOU LOOK AT THE *NETWORK WORLD* ARTICLE, IT WAS IN
10:56:51	21	2010, JANUARY, THE PRIOR ONE YOU SHOWED ME.
10:56:52	22	Q. COULD YOU OPEN YOUR BINDER TO TX 566, PLEASE. MAYBE YOU
10:57:06	23	DON'T HAVE IT. I DO.
10:57:07	24	A. IS THIS A TRICK QUESTION?
10:57:08	25	Q. MAYBE. DO YOU RECOGNIZE TX 566?

11:03:13 1   A.   THAT WAS IN SUMMER OF 2014.

11:03:18 2   Q.   SUMMER OF 2014?

11:03:19 3   A.   JUNE OF 2014.

11:03:23 4   Q.   AND WHEN DID YOU LEARN THAT THIS LAWSUIT WAS FILED?

11:03:27 5   A.   I LEARNED ABOUT IT IN DECEMBER OF 2014 ON A FRIDAY

11:03:32 6   EVENING.

11:03:32 7   Q.   HOW DID YOU LEARN THAT THE LAWSUIT HAD BEEN FILED?

11:03:36 8   A.   A BUSINESS REPORTER CONTACTED US AND ASKED US FOR OUR

11:03:40 9   RESPONSE ON THE CISCO LAWSUIT, WAS THE FIRST TIME I HEARD ABOUT

11:03:45 10   IT.

11:03:45 11   Q.   SO THE FIRST OCCASION YOU HEARD OF A LAWSUIT WAS WHEN THE

11:03:48 12   BUSINESS PRESS CALLED YOU?

11:03:49 13   A.   YEAH, IT WAS 5:00 P.M. ON A FRIDAY, AND I WAS COMPLETELY

11:03:54 14   SHOCKED. I HAD NO IDEA WHAT THEY WERE TALKING ABOUT.

11:03:57 15   Q.   DID THEY TELL YOU HOW THEY WERE AWARE THAT THE LAWSUIT HAD

11:04:01 16   BEEN FILED?

11:04:02 17   A.   THEY SAID THEY HAD BEEN NOTIFIED BY CISCO AND THEY HAD ALL

11:04:05 18   THE MATERIALS, INCLUDING THE ACTUAL PATENTS THAT INFRINGED THE

11:04:09 19   CLI COPYRIGHT, AND THEY HAD A DECK OF INFORMATION.

11:04:13 20   Q.   NOW PRIOR TO LEARNING THAT, DID ANYONE FROM CISCO CONTACT

11:04:17 21   YOU AT ANY TIME TO COMPLAIN ABOUT THE CLI THAT ARISTA WAS

11:04:22 22   USING?

11:04:23 23   A.   NO, THEY NEVER CONTACTED ME.

11:04:25 24   Q.   DID MR. CHAMBERS EVER ATTEMPT TO RAISE THIS WITH YOU,

11:04:29 25   EITHER IN PERSON OR ON THE PHONE?

11:04:30 1   A.   NO, HE NEVER DID.

11:04:31 2   Q.   WAS THERE ANY REQUEST FROM ANYONE AT CISCO TO ANYONE AT

11:04:35 3   ARISTA FOR A CEASE AND DESIST LETTER OR ANY SORT OF BUSINESS

11:04:41 4   DISCUSSION?

11:04:41 5   A.   NONE TO ME.

11:04:42 6   Q.   THE FIRST NOTICE YOU HAD WAS THIS REPORTER CALLING YOU AND

11:04:46 7   LETTING YOU KNOW THE LAWSUIT HAD BEEN FILED?

11:04:47 8   A.   YES.

11:04:51 9   MR. VAN NEST: I HAVE NOTHING FURTHER, YOUR HONOR.

11:04:56 10   PASS THE WITNESS.

11:04:57 11   THE COURT: MR. PAK, WILL THIS BE YOU?

11:04:59 12   MR. PAK: YES.

11:05:00 13   THE COURT: ALL RIGHT.

11:05:04 14   **CROSS-EXAMINATION**

11:05:04 15   BY MR. PAK:

11:05:33 16   Q.   GOOD MORNING, MS. ULLAL.

11:05:34 17   A.   GOOD MORNING.

11:05:35 18   Q.   IT'S NICE TO SEE YOU AGAIN. YOU TALKED ABOUT A FEW

11:05:41 19   THINGS.

11:05:41 20   I JUST WANT TO CONFIRM, FIRST OF ALL, THAT WHILE YOU WERE

11:05:44 21   AT CISCO, DID YOU PERSONALLY WORK ON AN OPERATING SYSTEM CALLED

11:05:48 22   IOS XR?

11:05:50 23   A.   NO.

11:05:53 24   Q.   DID YOU HAVE PERSONAL KNOWLEDGE OF THE INTERNAL WORKINGS

11:05:57 25   OF THAT OPERATING SYSTEM?

11:21:28 1   Q.   AND YOU HAD NEVER ASKED ANYONE AT ARISTA WHETHER THEY HAD

11:21:32 2   COPIED SCREEN OUTPUTS AND COMMANDS FROM CISCO PRODUCTS IN

11:21:38 3   IMPLEMENTING ITS CLI, CORRECT?

11:21:40 4   A.   NO, I DID NOT.

11:21:41 5   Q.   OKAY. AND YOU AGREE WITH ME THAT IN TERMS OF CLI, YOU

11:21:48 6   WERE NOT AWARE OF ANY STANDARDS SETTING ORGANIZATION FOR

11:21:52 7   COMMAND-LINE INTERFACE COMMANDS, CORRECT?

11:21:55 8   A.   TO THE BEST OF MY KNOWLEDGE, NO.

11:21:57 9   Q.   OKAY. AND TO THE BEST OF YOUR KNOWLEDGE, YOU ADMIT THAT

11:22:00 10   THERE ARE NO STANDARDS SETTING ORGANIZATIONS THAT REQUIRE THE

11:22:04 11   USE OF CISCO CLI COMMANDS FOR INTEROPERABILITY, TRUE?

11:22:08 12   A.   THERE ARE NO STANDARD CLI ORGANIZATIONS FOR CISCO? I'M --

11:22:16 13   CISCO WOULD HAVE TO ANSWER THAT, NOT ME.

11:22:18 14   Q.   OKAY.

11:22:19 15   AND YOU WOULD AGREE THAT FOR ANY GIVEN FEATURE IN AN

11:22:23 16   OPERATING SYSTEM, THERE ARE MANY DIFFERENT WAYS TO WRITE

11:22:26 17   COMMANDS IN A COMMAND-LINE INTERFACE TO INVOKE THE SAME

11:22:29 18   FEATURE, CORRECT?

11:22:33 19   A.   I'M NOT AN EXPERT ON HOW CLI COMMANDS ARE WRITTEN OR

11:22:39 20   CHOSEN.

11:22:40 21   Q.   BUT YOU AGREE YOU CAN WRITE DIFFERENT COMMANDS FOR THE

11:22:43 22   SAME FUNCTIONALITY; RIGHT?

11:22:44 23   A.   I DON'T WANT TO TAKE A POINT OF VIEW ON SOMETHING I'M NOT

11:22:46 24   AN EXPERT ON.

11:22:47 25   Q.   OKAY. LET'S TAKE A LOOK AT WHAT YOU SAID IN YOUR

11:27:43 1   ARISTA ENGINEERS WERE COPYING CLI COMMANDS FROM CISCO?

11:27:46 2   A.   NO.

11:27:46 3   Q.   YOU NEVER TOLD CISCO OR CUSTOMERS THAT?

11:27:52 4   A.   THOSE EXACT WORDS? HAVE I TOLD A CUSTOMER THAT ARISTA

11:27:58 5   ENGINEERS EXACTLY COPIED THE CISCO CLI, ARE YOU ASKING ME THAT?

11:28:02 6   TO THE BEST OF MY KNOWLEDGE, I DIDN'T USE THOSE EXACT WORDS.

11:28:05 7   I HAVE TOLD CUSTOMERS THAT WE INTEROPERATE WITH CISCO AND

11:28:09 8   WE HAVE THE SAME CISCO-LIKE CLI.

11:28:11 9   Q.   ARE YOU DENYING THAT CUSTOMERS WERE TOLD BY ARISTA

11:28:16 10   ENGINEERS THAT CISCO'S CLI COMMANDS WERE COPIED INTO ARISTA

11:28:20 11   PRODUCTS? ARE YOU DENYING THAT?

11:28:24 12   A.   THAT'S A SEPARATE QUESTION. YOU ARE ASKING ME IF I TOLD

11:28:27 13   ENGINEERS THAT ARISTA ENGINEERS DID THE WORK. NOW YOU ARE

11:28:30 14   ASKING ME A SLIGHTLY DIFFERENT QUESTION.

11:28:32 15   COULD YOU REPEAT THE QUESTION?

11:28:33 16   Q.   YES.

11:28:35 17   ARE YOU DENYING THAT ARISTA PEOPLE TOLD CUSTOMERS THAT

11:28:40 18   ARISTA HAD COPIED CLI COMMANDS INTO ARISTA PRODUCTS?

11:28:45 19   A.   YOU ARE ASKING WHAT ARISTA PEOPLE TOLD NOT WHAT I TOLD.

11:28:49 20   Q.   CORRECT.

11:28:49 21   A.   NO, I'M NOT DENYING THAT.

11:28:51 22   Q.   YOU TALKED ABOUT AN EMPLOYEE THAT WAS TAKEN CARE OF,

11:29:01 23   MR. SOLLENDER; RIGHT?

11:29:04 24   A.   I DIDN'T MENTION THE NAME IN THE TESTIMONY, BUT YES.

11:29:08 25   Q.   SO WHEN YOU SAY TAKEN CARE OF, YOU FIRED THAT INDIVIDUAL,

11:30:19 1   A.   YES.

11:30:19 2   Q.   AND UNDERSTANDING THAT YOU'VE ADDED TO IT, THE CLI

11:30:22 3 ELEMENTS THAT CISCO IS COMPLAINING ABOUT, HAVE THEY BEEN IN THE

11:30:25 4 PRODUCT THE WHOLE TIME?

11:30:27 5   A.   PRETTY MUCH, YES.

11:30:28 6   Q.   HAVE THEY BEEN PUBLIC?

11:30:30 7   A.   VERY PUBLIC.

11:30:31 8   Q.   HAVE YOU PROMOTED THEM AS EITHER IOS-LIKE OR CISCO-LIKE?

11:30:37 9   A.   YES, ALL OF THE ABOVE.

11:30:39 10   Q.   HAS THAT EVER BEEN A SECRET TO ANYBODY?

11:30:43 11   A.   NO, QUITE THE OPPOSITE.

11:30:44 12   Q.   DID ANYTHING CHANGE IN THE SPRING OF 2014 WITH RESPECT TO

11:30:47 13 THAT?

11:30:47 14   A.   NO, IT WAS THE SAME CONSISTENT TRANSPARENT COMMUNICATION

11:30:53 15 FROM 2008 TO 2014.

11:30:54 16   Q.   AND YOU WERE ASKED WHETHER ARISTA ASKED FOR A LICENSE OR

11:30:59 17 PERMISSION, DID IT OCCUR TO YOU TO ASK CISCO FOR PERMISSION TO

11:31:04 18 USE THE CLI?

11:31:05 19   A.   NO.

11:31:06 20   Q.   WHY NOT?

11:31:07 21   A.   BECAUSE EVEN WHEN I WAS AT CISCO, WE ENCOURAGED THE OPEN

11:31:12 22 USE OF THE INDUSTRY STANDARD CLI. WE WANTED OTHER VENDORS TO

11:31:17 23 USE IT, WE WANTED MULTI VENDOR INTEROPERABILITY. SO IT NEVER

11:31:21 24 OCCURRED IT ME THAT CISCO SUDDENLY CONSIDERED IT THEIR

11:31:24 25 INTELLECTUAL PROPERTY ALONE.

11:31:25 1   Q.   AND WHAT WAS THE BENEFIT TO CISCO, GOING BACK TO YOUR DAYS

11:31:30 2   THERE, OF ENCOURAGING PEOPLE TO THINK OF THE CLI AS INDUSTRY

11:31:36 3   STANDARD?

11:31:36 4   A.   WELL, CISCO WAS A NEW VENDOR IN SWITCHING. COMPANIES LIKE

11:31:41 5   FOUNDRY AND HP WERE IMPLEMENTING THE SAME CLI, AND IT WAS

11:31:44 6   CONVENIENT.

11:31:45 7   AND LIKEWISE, EVEN WHEN JUNIPER INTRODUCED THE ENTERPRISE

11:31:50 8   VERSION OF ROUTING, CISCO WANTED A BROAD ECO SYSTEM, AND FOR

11:31:56 9   THEIR CLI TO BECOME THE DE FACTO OPERATION FOR COMMUNICATION.

11:32:02 10   MR. VAN NEST: I HAVE NOTHING FURTHER, YOUR HONOR.

11:32:04 11   MR. PAK: I HAVE A FEW MORE FOLLOWUP QUESTIONS,

11:32:06 12   YOUR HONOR.

11:32:07 13   **RECROSS-EXAMINATION**

11:32:07 14   BY MR. PAK:

11:32:08 15   Q.   FIRST OF ALL MS. ULLAL, YOU WERE AT CISCO WHEN CISCO SUED

11:32:12 16   HUAWEI?

11:32:12 17   A.   I WAS EMPLOYED AT CISCO.

11:32:14 18   Q.   OKAY. BUT UNTIL THIS LAWSUIT, YOU PERSONALLY WERE NOT

11:32:18 19   AWARE OF THE DETAILS OF THAT LAWSUIT, CORRECT?

11:32:20 20   A.   CORRECT.

11:32:20 21   Q.   SO YOU DON'T KNOW ONE WAY OR THE OTHER WHETHER CISCO

11:32:24 22   INCLUDED A CLAIM FOR COPYRIGHT INFRINGEMENT AGAINST HUAWEI

11:32:29 23   BASED ON THE COPYING OF CISCO CLI, CORRECT?

11:32:31 24   A.   NO.

11:32:34 25   Q.   YOU TALKED ABOUT THE CLI BEING THE SAME AT ARISTA SINCE

11:32:37 1   2008. YOU DON'T KNOW THAT PERSONALLY, DO YOU? YOU DON'T KNOW

11:32:42 2   WHICH COMMANDS WERE ADDED WHEN BY ARISTA, DO YOU?

11:32:47 3   A.   I KNOW THEY THERE ARE MORE AND MORE COMMANDS ADDED SINCE

11:32:52 4   2008, YES.

11:32:53 5   Q.   THAT'S RIGHT. SO IN 2012, ISN'T IT TRUE THAT OVER 350 OF

11:32:58 6   THE MULTIWORD COMMANDS AT ISSUE WERE FIRST INCORPORATED INTO AN

11:33:01 7   ARISTA PRODUCT, WERE YOU AWARE OF THAT FACT?

11:33:04 8   A.   I'M NOT AWARE OF EXACTLY HOW MANY, BUT I'M GENERALLY

11:33:07 9   AWARE.

11:33:07 10   Q.   AND YOU ARE GENERALLY AWARE THAT THE INITIAL SET OF

11:33:10 11   PRODUCTS THAT ARISTA WAS MAKING HAD LIMITED FEATURES AND

11:33:13 12   LIMITED COMMANDS, CORRECT?

11:33:14 13   A.   BECAUSE THEY HAD LIMITED FEATURES, THEY HAD LIMITED

11:33:17 14   COMMANDS, THAT'S CORRECT.

11:33:18 15   Q.   SO WHEN YOU INTRODUCED THE SPINE PRODUCT IN 2011 AND 12,

11:33:22 16   THERE WERE MANY, MANY MORE FEATURES AND MANY, MANY MORE

11:33:26 17   COMMANDS THAT WERE ADDED TO EOS; YOU DON'T DENY THAT, DO YOU?

11:33:29 18   A.   NO. THE MORE THE FEATURES, THE MORE THE COMMAND LINE.

11:33:32 19   Q.   AND MORE THE COMMANDS THAT WERE COPIED FROM CISCO,

11:33:35 20   CORRECT?

11:33:35 21   A.   THEY WERE INDUSTRY STANDARD FEATURES AND ACTION WORDS.

11:33:40 22   Q.   AND MS. ULLAL, YOU TALKED ABOUT JUNIPER. YOU KNOW THAT

11:33:44 23   JUNIPER'S CLI IS DIFFERENT THAN CISCO'S CLI, CORRECT?

11:33:47 24   A.   NO. THE JUNIPER ENTERPRISE CLI IS SIMILAR TO THE ARISTA

11:33:51 25   CLI AND CISCO CLI.

02:07:48 1   Q.   WERE THERE BENEFITS TO CISCO WITH CUSTOMERS OF PRESENTING

02:07:53 2   CISCO'S CLI AS AN INDUSTRY STANDARD OR DE FACTO STANDARD?

02:07:58 3   A.   WELL, CERTAINLY, CISCO HAD A FAIRLY EXTENSIVE TRAINING

02:08:02 4   PROGRAM FOR OUR CUSTOMERS CALLED THE CCIE, CISCO CERTIFIED

02:08:06 5   INTERNET WORKING ENGINEER.

02:08:07 6   AND CCIE ENGINEERS WERE TRAINED IN THE CISCO CLI, AMONGST

02:08:13 7   OTHER THINGS, ON HOW TO BUILD AND EXPAND NETWORKS.

02:08:16 8   AND THOSE PEOPLE GOT THE LITTLE CERTIFICATES, AND THEY PUT

02:08:19 9   IT ON THEIR BUSINESS CARDS, AND THEY GOT PAID MORE FROM

02:08:23 10 CUSTOMERS.

02:08:23 11   SO THE CISCO WAY OF BUILDING THE NETWORK AND THE CISCO CLI

02:08:27 12 IS PART OF THAT, WAS AN ADVANTAGE TO BOTH CISCO AND OUR

02:08:30 13 CUSTOMERS, AND IT REINFORCED AGAIN, THE COMPETITIVE POSITION OF

02:08:36 14 CISCO IN THE MARKET.

02:08:37 15 Q.   WOULD YOU OPEN YOUR BINDER TO TX 5134, PLEASE, MR. VOLPI.

02:08:42 16 A.   WHICH BINDER?

02:08:45 17 Q.   THE ONE ON THE RIGHT THERE, THE NOTEBOOK.

02:08:47 18 A.   WHICH NUMBER AGAIN?

02:08:49 19 Q.   5134.

02:08:51 20   AND TELL ME, TAKE A LOOK AT IT, THE FIRST PAGE IS JUST A

02:08:55 21 COVER SHEET, BUT FLIP THROUGH AND TELL ME WHETHER THIS IS THE

02:09:00 22 KIND OF DOCUMENT PRODUCT REVIEW, STRATEGY REVIEW THAT YOU

02:09:05 23 TYPICALLY SAW AT CISCO?

02:09:08 24 A.   YOU ARE GOING TO HAVE TO PARDON MY INCOMPETENCE AT FINDING

02:09:11 25 THE PAGE NUMBER.

02:09:12   1   Q.   OH, I'M SORRY. ISN'T THERE A TAB THAT SAYS 5134?

02:09:23   2   A.   OH, YES, I HAVE IT HERE. COULD YOU REPEAT THE QUESTION,

02:09:26   3   PLEASE?

02:09:26   4   Q.   SURE. I CAN.

02:09:27   5   I WOULD LIKE YOU TO LOOK THROUGH THE FIRST TWO OR

02:09:30   6   THREE PAGES AND TELL ME WHETHER THIS IS THE KIND OF PRODUCT OR

02:09:33   7   STRATEGY REVIEW THAT YOU WERE ACCUSTOMED TO SEEING AT CISCO?

02:09:36   8   A.   YES, THIS WOULD BE.

02:09:51   9   MR. VAN NEST: I WOULD MOVE 5134 IN EVIDENCE,

02:09:54   10   YOUR HONOR.

02:09:54   11   THE COURT: ANY OBJECTION?

02:09:56   12   MR. NELSON: NO OBJECTION, YOUR HONOR.

02:09:58   13   THE COURT: OKAY. IT WILL BE ADMITTED.

02:09:59   14   (DEFENDANT'S EXHIBIT 5134 WAS ADMITTED INTO EVIDENCE.)

02:09:59   15   BY MR. VAN NEST:

02:10:00   16   Q.   BEFORE WE GET INTO THE DETAIL, WHAT DOES THIS APPEAR TO

02:10:03   17   REFLECT, MR. VOLPI?

02:10:04   18   A.   IT SEEMS TO DISCUSS A PARTICULAR USE CASE OF SOME

02:10:13   19   COMMAND-LINE INTERFACE OF HOW YOU COULD CONFIGURE A ROUTER AND

02:10:17   20   DO SOME DEMONSTRATIONS AROUND THAT FOR CUSTOMERS.

02:10:19   21   Q.   OKAY. AND COULD WE PUT UP PAGE 3, WHICH IS A DIAGRAM, AND

02:10:24   22   BLOW IT UP, PLEASE.

02:10:25   23   NOW MR. VOLPI, I'VE GOT IT ON THE SCREEN SO YOU DON'T HAVE

02:10:29   24   TO FIND IT THERE. BUT IS THIS DEPICTING SOME KIND OF A ROAD

02:10:33   25   MAP?

02:10:34 1   A.   YEAH.   IT ESSENTIALLY EXPLAINS, I BELIEVE, THE EVOLUTION

02:10:40 2   OF HOW THE IOS SOFTWARE, THAT'S KIND OF IN THE FIRST 1993

02:10:48 3   VERTICAL, WHICH IS THE CORE SOFTWARE THAT OPERATES THE ROUTERS

02:10:52 4   AND SWITCHES AT CISCO, SOME OF THE SWITCHES AT CISCO, DESCRIBED

02:10:56 5   HOW THAT LANGUAGE, A PARSER IS HOW IOS INTERPRETS THE

02:11:02 6   COMMAND-LINE INTERFACE.   AND HOW THAT'S BECOMING, OR HOW,

02:11:07 7   ESSENTIALLY, THE CLI IS BECOMING AN INDUSTRY STANDARD WHERE

02:11:13 8   IT'S A COMMONLY ACCEPTED WAY IN WHICH USERS CAN ISSUE COMMANDS

02:11:20 9   TO DEVICES THAT USE THE SOFTWARE CALLED IOS.

02:11:23 10   Q.   NOW CAN YOU SEE THAT THE DATE ON THIS DOCUMENT IS 2005?

02:11:28 11   A.   YES.

02:11:29 12   Q.   OKAY.   AND SO I WOULD LIKE TO HIGHLIGHT WHAT WE HAVE ON

02:11:33 13   THE SCREEN.   IT SAYS, ACTUALLY SAYS, "CLI BECOMES INDUSTRY

02:11:39 14   STANDARD."   INDICATING A PERIOD BETWEEN '93 AND 2000.

02:11:42 15   DO YOU SEE THAT?

02:11:43 16   A.   YES.

02:11:43 17   Q.   WAS THAT CONSISTENT WITH YOUR UNDERSTANDING ABOUT THE

02:11:46 18   CISCO CLI DURING THE PERIOD WHEN YOU WERE MANAGING LINE UNITS

02:11:53 19   THERE, THAT IT HAD BECOME AN INDUSTRY STANDARD?

02:11:57 20   A.   I STARTED MANAGING THE LINE UNITS AFTER 2001, SO THIS TIME

02:12:01 21   PERIOD IS NOT A PERIOD OF TIME IN WHICH I MANAGED LINE UNITS.

02:12:04 22   WHAT I INTERPRET FROM IT, WHEN I JOINED CISCO IN 1994, WE

02:12:07 23   WERE A GOOD COMPANY, BUT WE WERE ONE OF MANY COMPETITORS IN THE

02:12:12 24   SPACE.   WE HAD LOTS OF -- LARGE AND SCARY COMPETITORS.   AND BY

02:12:18 25   2000 WE HAD LARGELY OUT-COMPETED MOST OF THEM.   AND WE HAD

02:12:22 1   GAINED MUCH HIGHER MARKET SHARE BY THEN.

02:12:25 2   THE RESULT OF THAT HIGH MARKET SHARE AND THE BROAD USE OF

02:12:29 3   CISCO PRODUCTS IS WHAT PRESUMABLY CREATED THIS NOTION THAT IT

02:12:33 4   BECAME AN INDUSTRY STANDARD.

02:12:34 5   Q.   DID YOU -- DO YOU RECALL HEARING PEOPLE ON OTHER OCCASIONS

02:12:39 6   DURING YOUR TENURE AS ONE OF THE MANAGERS AT CISCO, REFER TO

02:12:44 7   THE CLI AS INDUSTRY STANDARD, AS SHOWN IN THIS DOCUMENT?

02:12:47 8   A.   YEAH. I DON'T REMEMBER EXACT CONVERSATIONS, BUT IT WAS

02:12:51 9   COMMONLY UNDERSTOOD.

02:12:52 10   Q.   OKAY. WOULD YOU TAKE A LOOK AT 5457, AND THAT'S IN

02:13:00 11   EVIDENCE, SO COULD WE PUT THAT ON THE SCREEN.

02:13:05 12   ACTUALLY BEFORE WE LOOK AT IT, I WANT TO ASK A QUESTION OF

02:13:08 13   YOU, MR. VOLPI.

02:13:10 14   WHILE YOU WERE IN THE ETHERNET SWITCHING AND ROUTING UNITS

02:13:13 15   AT CISCO, DID CISCO ACTUALLY PROMOTE ITS CLI AS AN "INDUSTRY

02:13:18 16   STANDARD?"

02:13:19 17   A.   I BELIEVE THE LANGUAGE WAS USED FAIRLY BROADLY IN THE

02:13:23 18   DOCUMENTATION THAT WE HAVE.

02:13:24 19   Q.   AND BY DOCUMENTATION, DO YOU MEAN PUBLIC DOCUMENTATION?

02:13:28 20   A.   YEAH, DOCUMENTATION WE WOULD USE AT MARKETING EVENTS OR

02:13:31 21   PROVIDE THEM TO CUSTOMERS.

02:13:33 22   Q.   AND LET'S TAKE A LOOK NOW AT 5457, THAT'S ALREADY IN

02:13:36 23   EVIDENCE. AND I BELIEVE THERE'S A PAGE -- THIS IS A SOFTWARE

02:13:39 24   RELEASE. I BELIEVE SLIDE 96 WAS ONE WE HAVE LOOKED AT BEFORE.

02:13:45 25   I'M GOING TO BLOW THAT UP ON THE SCREEN, MR. VOLPI.

02:13:49 1   THIS SAYS, "CISCO IOS CLI, CURRENT DE FACTO STANDARD;" DO

02:13:54 2   YOU SEE THAT?

02:13:55 3   A.   YES.

02:13:55 4   Q.   THEN THERE'S A PRO AND A CON.

02:13:58 5   A.   YES.

02:13:58 6   Q.   WAS THIS THE TYPE OF STATEMENT FREQUENTLY MADE TO THE

02:14:05 7   CUSTOMERS ABOUT THE CLI?

02:14:06 8   A.   YES, IT WAS FREQUENTLY MADE.

02:14:10 9   IN THIS PARTICULAR CASE, ESSENTIALLY, THERE WERE ALWAYS

02:14:15 10 DEBATES ON WHETHER CLI WAS THE RIGHT TECHNOLOGY FOR THE FUTURE

02:14:20 11 AT CISCO AND WHETHER MAYBE CISCO SHOULD CHANGE IT SOMEHOW AT

02:14:25 12 SOME POINT IN TIME.

02:14:27 13   WHAT THIS DOCUMENT ARGUES IS THAT PRO'S AND CON'S OF ITS

02:14:31 14 NATURE. SO IT SAYS IT'S VERY POWERFUL AND COMPLETE, AND SO

02:14:35 15 FORTH, BUT IT'S NOT VERY GOOD FOR PROGRAM ACCESS AND A FEW

02:14:39 16 OTHER THINGS. BUT IT WAS CLEAR IT WAS A WELL-ACCEPTED STANDARD

02:14:43 17 AT THAT POINT.

02:14:44 18 Q.   WOULD YOU OPEN UP YOUR BINDER TO TX 5451, PLEASE, AND TELL

02:14:51 19 ME WHETHER YOU RECOGNIZE THAT AS A FAIRLY TYPICAL MARKETING

02:14:54 20 DOCUMENT IN USE AT CISCO?

02:14:56 21 A.   YES, IT WAS.

02:14:57 22 Q.   OKAY.

02:14:58 23   MR. VAN NEST: I WOULD OFFER 5451 IN EVIDENCE

02:15:00 24 YOUR HONOR.

02:15:00 25   THE COURT: ANY OBJECTION.

02:15:01   1   MR. NELSON: NO OBJECTION.

02:15:02   2   THE COURT: IT WILL BE ADMITTED.

02:15:11   3   (DEFENDANT'S EXHIBIT 5451 WAS ADMITTED INTO EVIDENCE.)

02:15:11   4   BY MR. VAN NEST:

02:15:12   5   Q.   AND RIGHT ON THE FIRST PAGE, THIS IS AT THE BOTTOM,

02:15:16   6   MR. VOLPI. AND AGAIN, I'VE GOT IT ON THE SCREEN, IF WE COULD

02:15:19   7   HIGHLIGHT THAT. "COST-EFFECTIVE ADMINISTRATION, MOST SMALL OR

02:15:27   8   AUTONOMOUS BRANCH OFFICES CANNOT JUSTIFY THE EXPENSE OF HIGH

02:15:31   9   LEVEL ON-SITE TECHNICAL EXPERTISE. BECAUSE OF THIS, CISCO

02:15:34   10   OFFERS CUSTOMERS THE OPTION OF USING THE INDUSTRY STANDARD

02:15:37   11   CISCO IOS SOFTWARE COMMAND-LINE INTERFACE."

02:15:39   12   WHAT DOES THAT REFER TO?

02:15:40   13   A.   I THINK VERY SIMILAR TO WHAT WE HAVE BEEN TALKING ABOUT.

02:15:44   14   THIS IS A MARKETING DOCUMENT THAT CISCO WOULD PROVIDE TO

02:15:49   15   CUSTOMERS. AND IT INDICATES THAT FOR CUSTOMERS THAT ARE LESS

02:15:55   16   SOPHISTICATED, LESS TECHNICAL, AND DON'T HAVE A LOT OF ON-SITE

02:16:00   17   EXPERTISE, MEANING PEOPLE THAT COULD WALK UP TO THE ROUTER AND

02:16:05   18   TOUCH IT AND CHANGE IT, THAT CISCO OFFERS ITS INDUSTRY

02:16:08   19   STANDARD, CISCO IOS SOFTWARE, COMMAND-LINE INTERFACE, WHICH IS

02:16:10   20   ESSENTIALLY THE WAY TO CONFIGURE THE ROUTER.

02:16:12   21   SO CISCO IS STATING THAT THE COMMAND-LINE INTERFACE IS AN

02:16:15   22   INDUSTRY STANDARD IN THIS DOCUMENT.

02:16:16   23   Q.   AND IN CONNECTION WITH THIS PARTICULAR PROMOTION, WHAT

02:16:19   24   WOULD BE THE BENEFIT TO CISCO OF PROMOTING THE CLI TO THESE

02:16:24   25   CUSTOMERS AS INDUSTRY STANDARD?

02:16:25 1   A.   WELL, PRESUMABLY THE CUSTOMERS, THEY DON'T HAVE A LOT OF

02:16:29 2   EXPERTISE ON THEIR OWN BECAUSE THESE ARE COMPLICATED THINGS.

02:16:32 3   SO THEY WOULD WANT TO HIRE A CONSULTANT OR AN ADVISOR OR

02:16:35 4   SOMEBODY THAT CAN HELP THEM TO CONFIGURE THE ROUTER.

02:16:39 5   AND WHAT THIS IS ESSENTIALLY SAYING IS THAT OUR ROUTER

02:16:41 6   SPEAKS THIS LANGUAGE CLI THAT EVERYBODY UNDERSTANDS. SO IT

02:16:47 7   SHOULD BE EASY FOR YOU TO FIND SOMEBODY THAT COULD CONFIGURE OR

02:16:50 8   MANAGE THE DEVICE.

02:16:51 9   Q.   WAS THAT A SELLING ADVANTAGE FOR CISCO?

02:16:52 10   A.   I MEAN, IT CLEARLY IS BECAUSE THAT WAY, YOU KNOW, EVEN A

02:16:56 11   SMALL BUSINESS CAN AFFORD TO BRING ON SOMEBODY TO MANAGE THEIR

02:16:58 12   NETWORK.

02:16:58 13   Q.   WOULD YOU OPEN UP YOUR BINDER TO TX 8237, PLEASE.

02:17:08 14   CAN YOU TELL ME WHETHER YOU RECOGNIZE THAT AS A SIMILAR

02:17:11 15   MARKETING -- SIMILAR PRODUCT MANUAL-TYPE DOCUMENT?

02:17:17 16   A.   YES, IT IS.

02:17:18 17   MR. VAN NEST: I WOULD OFFER 8237 IN EVIDENCE,

02:17:21 18   YOUR HONOR.

02:17:21 19   MR. NELSON: NO OBJECTION YOUR HONOR.

02:17:22 20   THE COURT: IT WILL BE ADMITTED.

02:17:24 21   (DEFENDANT'S EXHIBIT 8237 WAS ADMITTED INTO EVIDENCE.)

02:17:24 22   BY MR. VAN NEST:

02:17:25 23   Q.   IF WE COULD JUST PUT THE FRONT PAGE OF IT UP ON THE

02:17:28 24   SCREEN. WHAT IS 8237, MR. VOLPI?

02:17:30 25   A.   IT LOOKS LIKE A PIECE OF DOCUMENTATION THAT CISCO HAS

02:17:34 1   PRODUCED ON ANOTHER VARIANT OF THE IOS SOFTWARE CALLED IOS XR.

02:17:39 2   Q.   AND HOW WOULD A DOCUMENT LIKE THIS BE USED OR HOW WAS IT

02:17:43 3   USED DURING YOUR TENURE AT CISCO?

02:17:46 4   A.   MY GUESS IS THESE DOCUMENTS ARE HANDED OUT TO CUSTOMERS

02:17:53 5   FOR THEM TO BETTER UNDERSTAND HOW TO MANAGE, CONFIGURE, SUPPORT

02:17:59 6   THE PRODUCTS THAT CISCO SELLS TO THEM.

02:18:02 7   Q.   OKAY. AND THIS ONE HAS TO DO WITH, I GUESS A SUBSEQUENT

02:18:05 8   VERSION OF IOS, THIS IS THE IOS XR?

02:18:07 9   A.   YES, IT IS.

02:18:08 10   Q.   COULD WE GO TO THE SECOND PAGE AND BLOW UP THE

02:18:11 11   MANAGEABILITY SECTION IN THE INTRODUCTION.

02:18:18 12   AND THIS SAYS, MANAGEABILITY PROVIDES INDUSTRY STANDARD

02:18:23 13   MANAGEMENT INTERFACES, INCLUDING MODULAR COMMAND-LINE

02:18:27 14   INTERFACE, CLI, AND THEN IT GOES ON.

02:18:31 15   WHAT IS BEING REFERRED TO IN THAT FIRST PART OF THE

02:18:34 16   SENTENCE, "THE INDUSTRY STANDARD MANAGEMENT INTERFACES,

02:18:37 17   INCLUDING MODULAR COMMAND-LINE INTERFACE."

02:18:39 18   WHAT IS THAT REFERRING TO?

02:18:40 19   A.   RIGHT. SO IN THIS CASE THE DOCUMENT SAYS THIS SOFTWARE

02:18:43 20   CALLED IOS XR CAN BE MANAGED IN THREE WAYS.

02:18:47 21   THE COMMAND-LINE INTERFACE, ANOTHER LANGUAGE THAT'S OFTEN

02:18:50 22   USED CALLED SIMPLE NETWORK MANAGEMENT PROTOCOL, WHICH IS A

02:18:54 23   DIFFERENT WAY MANAGING THE DEVICE. OR XML, WHICH IS SORT OF A

02:18:59 24   MORE PROGRAMMABLE WAY.

02:19:00 25   SO THESE ARE BASICALLY THREE SEPARATE WAYS IN WHICH THESE

02:37:13 1   Q.   SO CAN YOU SAY THAT ONE MORE TIME, SLOWLY, FOR THE JURY?

02:37:16 2   A.   NO, I DID NOT LOOK AT COMPETING PRODUCTS.

02:37:19 3   Q.   AND YOU DID NOT DO THAT INTENTIONALLY?

02:37:21 4   A.   INTENTIONALLY, YES.

02:37:23 5   Q.   AND WHY DID YOU DECIDE, AS THE CREATOR OF THE JUNIPER CLI,

02:37:27 6   TO CHOOSE NOT TO INTENTIONALLY LOOK AT A COMPETING CLI FROM

02:37:32 7   CISCO?

02:37:32 8   A.   THERE WERE THREE MAIN REASONS.

02:37:36 9   THE FIRST WAS WE DIDN'T WANT TO GIVE CISCO ANY GROUNDS TO

02:37:39 10   SUE US.

02:37:40 11   THE SECOND WAS THE -- BASED ON FEEDBACK FROM THE

02:37:51 12   CUSTOMERS, WE WANTED TO DO SOMETHING BETTER.

02:37:52 13   AND THE THIRD WAS, YOU KNOW, AS A NEW COMPANY HAVING THIS

02:37:56 14   INCREDIBLE GREEN FIELD EXPERIENCE OPPORTUNITY, I WANTED TO

02:37:59 15   WRITE SOMETHING COMPLETELY NEW, SOMETHING THAT I WANTED TO MAKE

02:38:02 16   AND USE. I DIDN'T WANT TO COPY SOMETHING.

02:38:05 17   Q.   OKAY. SO I WANT TO GO THROUGH EACH OF THOSE REASONS THAT

02:38:09 18   YOU JUST STATED ON THE RECORD.

02:38:10 19   SO FIRST OF ALL, WHEN YOU SAID GREEN FIELD PRODUCT OR THIS

02:38:13 20   WAS A BRAND-NEW OPPORTUNITY FOR YOU, WHAT DID YOU MEAN BY THAT?

02:38:17 21   AND CAN YOU EXPLAIN WHY THAT WAS AN INFLUENCE ON YOU IN

02:38:20 22   DECIDING TO CREATE THE JUNOS CLI?

02:38:22 23   A.   SO THE TERM "GREEN FIELD" COMES FROM AN OPEN PASTURE. YOU

02:38:26 24   CAN GO IN ANY DIRECTION, EVERYTHING IS WILD. YOU CAN MAKE IT

02:38:30 25   WHAT YOU WANT. THERE ARE NO CONSTRAINTS ON WHAT YOU ARE DOING.

02:38:34   1   I KIND OF HAD THAT OPPORTUNITY IN WHAT I COULD DO,

02:38:44   2   LITERALLY NOBODY COULD SAY THAT, DON'T DO THAT, I COULD DO

02:38:45   3   WHATEVER I WANTED.

02:38:46   4   Q.   THAT WAS BECAUSE YOU WERE AT JUNIPER AND THEY WERE WORKING

02:38:49   5   ON THEIR FIRST CLI?

02:38:50   6   A.   IT WAS A SMALL COMPANY AND WE HAD TECHNICAL REVIEW AND

02:38:53   7   STUFF LIKE THAT, BUT IT WAS REALLY AN OPPORTUNITY TO REIMAGINE

02:38:57   8   THE INTERACTION BETWEEN USERS AND DEVICES.

02:39:00   9   Q.   AND WAS THAT AN EXCITING OPPORTUNITY FOR YOU?

02:39:02   10   A.   YES, IT WAS.

02:39:02   11   Q.   AND THE SECOND REASON, I THINK YOU MENTIONED WAS SOMETHING

02:39:06   12   ABOUT CUSTOMERS, CUSTOMER FEEDBACK.

02:39:09   13   AND CAN YOU EXPLAIN A LITTLE BIT FURTHER ABOUT SOME OF THE

02:39:13   14   CUSTOMER FEEDBACK THAT YOU HAD BEEN HEARING ABOUT CISCO CLI AND

02:39:16   15   HOW THAT INFLUENCED YOUR DECISION TO COME UP WITH A DIFFERENT

02:39:19   16   USER INTERFACE FOR JUNIPER?

02:39:21   17   A.   SURE.

02:39:23   18   IF YOU -- SO IOS, EVEN AT THAT POINT IN '97, WAS FAIRLY

02:39:29   19   OLD. AND THE WAY IT APPROACHED CONFIGURATION OF THE COMMANDS

02:39:33   20   AND THE USER INTERACTION WAS FAIRLY DATED.

02:39:38   21   WE WANTED TO DO SOMETHING MORE MODERN, SOMETHING MORE

02:39:43   22   HIERARCHICAL, SOMETHING THAT WOULD HELP USERS IN THE DAY-TO-DAY

02:39:49   23   OPERATIONS THAT THEY USED OUR DEVICES FOR.

02:39:51   24   Q.   NOW THE OTHER THIRD REASON THAT YOU MENTIONED IS IN

02:39:55   25   LOOKING AT CISCO'S IOS CLI, YOU WERE CONCERNED THAT YOU DIDN'T

02:40:00 1   WANT TO GET SUED BY CISCO.

02:40:01 2   CAN YOU EXPLAIN FURTHER, FOR THE JURORS, WHAT THAT CONCERN

02:40:04 3   WAS ABOUT?

02:40:04 4   A.   SO BEFORE COMING TO JUNIPER I WAS EMPLOYED AS A CONTRACTOR

02:40:09 5   FOR IBM, AND IBM HAS A VERY, A VERY STRINGENT POLICY OF NOT

02:40:15 6   ALLOWING DEVELOPERS TO LOOK AT COMPETITORS'S PRODUCTS.

02:40:19 7   WE WOULD GET REPORTS AND CRITIQUES ON WHAT WAS AVAILABLE

02:40:24 8   IN THE MARKETPLACE, BUT WE DIDN'T ACTUALLY LOOK AT PRODUCTS.

02:40:27 9   IT WAS KIND OF A WALL TO KEEP US FROM ANY SUSPICION OR ANY

02:40:31 10   TAINT OF DERIVATIVE -- OF BEING CALLED A DERIVATIVE PRODUCT.

02:40:43 11   Q.   SO BY NOT LOOKING AT CISCO'S CLI AND USING CISCO'S CLI

02:40:48 12   COMMANDS, WERE YOU TRYING TO AVOID INFRINGING ANY OF CISCO'S

02:40:52 13   INTELLECTUAL PROPERTY RIGHTS?

02:40:53 14   A.   I WAS TRYING TO STAY CLEAR OF ANY ALLEGATION OF SUCH

02:41:02 15   BEHAVIOR.

02:41:03 16   Q.   OKAY. AND ARE YOU PROUD OF THE WORK THAT YOU'VE DONE WITH

02:41:06 17   YOUR JUNOS CLI?

02:41:07 18   A.   ABSOLUTELY.

02:41:08 19   Q.   AND HOW MANY, I KNOW IT'S HARD TO ESTIMATE, BUT HOW MANY

02:41:12 20   PRODUCTS WITHIN JUNIPER OVER THIS LONG PERIOD OF TIME HAVE RUN

02:41:17 21   SOME VERSION OF YOUR JUNIPER JUNOS CLI?

02:41:22 22   A.   I COULDN'T PUT A NUMBER ON IT, NORTH OF 18 OR 20.

02:41:29 23   Q.   OKAY. AND HAS JUNIPER BEEN ABLE TO EFFECTIVELY COMPETE

02:41:35 24   AGAINST CISCO IN VARIOUS MARKETS DURING YOUR TENURE THERE USING

02:41:41 25   A CLI THAT IS DIFFERENT FROM CISCO'S CLI?

02:41:43 1   A.   YES.

02:41:44 2   Q.   AND IN FACT, IN THE ROUTER MARKET, HOW WOULD YOU

02:41:48 3   CHARACTERIZE JUNIPER'S MARKET SHARE AS COMPARED TO CISCO'S?

02:41:51 4   A.   I BELIEVE WE ARE NUMBER TWO.

02:41:53 5   Q.   SO YOU WERE ABLE TO GAIN A NUMBER TWO MARKET SHARE IN THE

02:42:06 6   COMPETITIVE ROUTER MARKET COMPETING AGAINST CISCO BY USING A

02:42:10 7   USER INTERFACE THAT IS DIFFERENT THAN CISCO'S, IS THAT TRUE?

02:42:13 8   A.   YES, THAT IS TRUE.

02:42:15 9   Q.   AND I WOULD LIKE TO HAVE YOU TAKE A LOOK IN YOUR BINDER, I

02:42:21 10   BELIEVE THERE SHOULD BE A TRIAL EXHIBIT 4821.

02:42:31 11   I BELIEVE THIS HAS ALREADY BEEN ADMITTED INTO EVIDENCE?

02:42:34 12   MR. VAN NEST: IT HAS.

02:42:35 13   MR. PAK: SO I WOULD LIKE TO SHOW THAT ON THE SCREEN,

02:42:37 14   MR. FISHER.

02:42:39 15   Q.   MR. SHAFER, THESE ARE SOME OF THE COMMANDS THAT ARE AT

02:42:42 16   ISSUE IN THIS CASE THAT ARE CISCO COMMANDS.

02:42:44 17   CAN YOU -- I KNOW YOU HAVEN'T STUDIED THIS IN DETAIL, BUT

02:42:48 18   COULD YOU JUST FLIP THROUGH THIS COMMAND LIST AND LET THE JURY

02:42:51 19   KNOW WHETHER THIS LOOKS LIKE A LIST OF JUNIPER COMMANDS OR NOT.

02:42:59 20   DO THEY LOOK FAMILIAR YOU TO YOU AS JUNIPER COMMANDS?

02:43:02 21   A.   THESE ARE CERTAINLY NOT JUNIPER COMMANDS.

02:43:04 22   Q.   AND WHY DO YOU SAY THAT?

02:43:06 23   A.   THE STYLE BETWEEN IOS AND JUNOS IS VERY DIFFERENT IN TWO

02:43:12 24   PARTS.

02:43:12 25   ONE IS IOS REGARDS CONFIGURATION AS JUST A SERIES OF

02:43:18 1   COMMANDS. WHEREAS IN JUNOS, DATA IS MORE LIKE A DATABASE. YOU

02:43:23 2   EDIT IT, CHANGE IT, YOU COPY IT, YOU HAVE OPERATIONS YOU CAN

02:43:30 3   PERFORM ON DATA AS CONFIGURATION DATA. THEN THERE'S A SEPARATE

02:43:33 4   SET OF OPERATIONAL COMMANDS.

02:43:36 5   CISCO IOS MIXES THOSE TWO --

02:43:41 6   Q.   AND --

02:43:42 7   A.   -- IN WAYS THAT WE DO NOT.

02:43:43 8   Q.   YOU ALSO MENTIONED EARLIER THAT YOU BELIEVED THE JUNIPER

02:43:47 9   CLI IS MORE HIERARCHICAL THAN CISCO CLI.

02:43:50 10   COULD YOU EXPLAIN TO THE JURY WHAT YOU MEAN BY THAT?

02:43:52 11 A.   SO AN IOS COMMAND -- LET ME TRY IT THE OTHER WAY.

02:44:05 12   JUNOS COMMAND HAS A SERIES OF LAYERS AND YOU CAN EDIT INTO

02:44:10 13 THOSE LAYERS, LOOK AT THE PARTICULAR DATA UNDER A LAYER AND

02:44:13 14 SHOW IT.

02:44:13 15   IT'S SIMILAR TO FOLDERS AND DIRECTORIES ON A WINDOWS OR A

02:44:17 16 MAC. WHERE, IN IOS, EVERYTHING IS AT THE TOP LEVEL. JUNOS,

02:44:23 17 THERE IS THIS ORGANIZATION THAT ALLOWS YOU TO LOOK AT THE

02:44:26 18 CONFIGURATION FOR ANY PARTICULAR PROTOCOL SEPARATE FROM THE

02:44:29 19 REST OF THE BOX.

02:44:32 20 Q.   EVEN THOUGH YOU WERE USING SOME INDUSTRY COMMON WORDS AND

02:44:35 21 ACRONYMS, DID YOU FEEL COMPELLED TO USE CISCO'S SYNTAX AND

02:44:39 22 CISCO'S HIERARCHY WHEN COMING UP WITH JUNIPER'S CLI?

02:44:43 23 A.   WE ATTEMPTED TO USE THE COMMANDS AND TERMS THAT WERE MOST

02:44:49 24 APPROPRIATE FOR THE TASK AT HAND.

02:44:52 25   AT THE BOTTOM OF THE FIRST PAGE -- SO THERE IS SOME AMOUNT

02:54:07 1   THE JUNOS-E CLI, CORRECT?

02:54:09 2   A.   YES, WE ACQUIRED A COMPANY CALLED UNISPHERE THAT HAD

02:54:12 3   EXISTING SOFTWARE AND HAD EXISTING CUSTOMERS, AND WE CONTINUED

02:54:16 4   TO SUPPORT THEM.

02:54:16 5   Q.   WHAT WAS THAT COMPANY CALLED UNISPHERE?

02:54:19 6   A.   UNISPHERE.

02:54:20 7   Q.   THANK YOU.

02:54:21 8   AND THAT PRODUCT THAT JUNIPER ACQUIRED AND THEN SOLD UNDER

02:54:24 9   ITS OWN NAME STARTING IN 2002, THAT PRODUCT USED HUNDREDS OF

02:54:29 10   THE SAME CLI COMMANDS THAT ARE SUPPORTED BY THE CISCO IOS CLI;

02:54:34 11   RIGHT?

02:54:34 12   A.   YES.

02:54:35 13   Q.   AND IT SUPPORTED THE SAME COMMAND MODES AND THE SAME

02:54:40 14   COMMAND PROMPTS THAT THE CISCO IOS CLI SUPPORTED; RIGHT?

02:54:43 15   A.   I BELIEVE THAT WAS THE GOAL, YES.

02:54:45 16   Q.   OKAY. AND THAT STARTED IN 2002, JUNIPER STARTED SELLING

02:54:48 17   THAT PRODUCT IN 2002, CORRECT?

02:54:51 18   A.   YES. I'M FUZZY ON THE DATE, BUT YES, I WAS THINKING IT

02:54:58 19   WAS 2004, BUT 2002 COULD BE CORRECT.

02:55:03 20   Q.   EARLY 2000'S?

02:55:04 21   A.   YES.

02:55:05 22   Q.   AND JUNIPER CONTINUED TO DEVELOP AND BUILD UPON THE

02:55:08 23   JUNOS-E CLI FOR AT LEAST 14 YEARS, CORRECT? BEFORE IT WAS

02:55:12 24   END-OF-LIFE'D?

02:55:16 25   A.   YES.

02:55:17   1   Q.   RIGHT.

02:55:17   2   WHEN CISCO'S COUNSEL ASKED YOU WHETHER OR NOT THE JUNOS-E

02:55:21   3   PRODUCTS HAD REACHED ITS END OF LIFE THAT, HAPPENED VERY

02:55:25   4   RECENTLY, CORRECT?

02:55:26   5   A.   YES.   WE STARTED SOME TIME IN THE 2009, 2010 TO

02:55:37   6   INCORPORATE THE FEATURES OF THAT DEVICE INTO JUNOS PROPER.   YOU

02:55:41   7   KNOW, IT TAKES A WHILE FOR TO DEVELOP SOFTWARE AND TEST AND

02:55:45   8   EXPOSE IT TO CUSTOMERS AND MAKE THEM HAPPY, AND SO IT WAS A

02:55:49   9   LENGTHY PROCESS --

02:55:51 10   Q.   OKAY.   SURE.

02:55:52 11   A.   -- TO TAKE AWAY FROM THAT.

02:55:53 12   Q.   BUT THE JUNOS-E PRODUCT WAS STILL BEING SOLD BY JUNIPER AS

02:55:57 13   RECENTLY AS 2014; RIGHT?

02:55:59 14   A.   SURE.

02:55:59 15   Q.   OKAY.

02:56:00 16   AND SO FOR AT LEAST 12 YEARS, JUNIPER WAS OPENLY SELLING A

02:56:05 17   CLI THAT HAD HUNDREDS OF THE SAME CLI COMMANDS AS CISCO IOS, AS

02:56:11 18   WELL AS THE SAME MODES AND PROMPTS AS CISCO IOS; RIGHT?

02:56:15 19   A.   WE ARE VERY SIMILAR, YEAH.

02:56:18 20   Q.   AND DO YOU BELIEVE THAT JUNIPER WOULD HAVE OFFERED A CLI

02:56:21 21   IN ONE OF ITS PRODUCTS THAT HAD HUNDREDS OF THE SAME CLI

02:56:24 22   COMMANDS AS CISCO IOS AND THE SAME MODES AND PROMPTS IF JUNIPER

02:56:29 23   BELIEVED THAT THAT WERE A VIOLATION OF CISCO'S COPYRIGHTS?

02:56:34 24   A.   I CAN'T SPEAK FOR THAT.

02:56:38 25   MR. WONG: I HAVE NO FURTHER QUESTIONS, YOUR HONOR.

03:24:13 1   Q.   AND ARE YOU CURRENTLY TEACHING AT BOULDER?

03:24:16 2   A.   NO, ACTUALLY I'M ON A TWO-YEAR LEAVE OF ABSENCE.

03:24:19 3   SO THROUGH 2017, I TOOK THE LEAVE IN ORDER TO START A NEW

03:24:23 4   COMPANY WITH SOME COLLEAGUES. THE COMPANY IS TRYING TO TAKE

03:24:28 5   NOMINALLY COMPETENT TECHNICAL PEOPLE AND MAKE THEM NETWORK

03:24:32 6   SECURITY SPECIALISTS.

03:24:33 7   Q.   DO YOU HAVE ANY EXPERIENCE WITH INDUSTRY STANDARD

03:24:37 8   ORGANIZATIONS?

03:24:38 9   A.   YEAH. SOME OF MY WORK I HAVE GONE OUT TO MARYLAND, THIS

03:24:43 10   PLACE CALLED NIST, THE NATIONAL INSTITUTE FOR STANDARDS AND

03:24:47 11   TECHNOLOGY, AND PROMOTED SOME OF MY WORK, SOMETIMES OTHER

03:24:50 12   PEOPLE'S WORK, TO CREATE STANDARDS.

03:24:52 13   AND IN ONE CASE, ONE OF THOSE STANDARDS HAS NOW BEEN

03:24:56 14   ADOPTED BY THE ITEF INTO AN RFC THAT IS WIDELY AVAILABLE ON THE

03:25:01 15   INTERNET.

03:25:02 16   Q.   HAVE YOU EVER USED EITHER CISCO OR ANOTHER COMPANY'S

03:25:07 17   ETHERNET SWITCHES?

03:25:07 18   A.   CERTAINLY.

03:25:09 19   I THINK THE FIRST TIME I SAW A CISCO CLI WOULD HAVE BEEN

03:25:14 20   ABOUT 25 YEARS AGO, BACK WHEN I WAS AT INGRES, AND THAT'S ALL I

03:25:20 21   SAW FOR QUITE A WHILE.

03:25:22 22   NOW I'M THE CHAIR OF THE COMPUTING COMMITTEE WHICH

03:25:26 23   OVERSEES ALL THE SERVERS AND NETWORKS IN MY DEPARTMENT AT CU

03:25:30 24   BOULDER.

03:25:31 25   AND THERE WE USE A DELL SWITCH IN OUR DATA CENTER. WE

03:27:51 1   EXPERT IN NETWORKING, NETWORKING PROTOCOL AND COMMAND-LINE

03:27:56 2   INTERFACE.

03:27:56 3   MR. FERRALL: THANK YOU, YOUR HONOR.

03:27:57 4   Q.   NOW DR. BLACK, HAVE YOU EVER TESTIFIED AT TRIAL BEFORE?

03:28:06 5   A.   THIS IS MY FIRST TIME IN FRONT OF A JURY.

03:28:08 6   Q.   ALL RIGHT. AND YOU'VE BEEN RETAINED BY ARISTA IN THIS

03:28:13 7   MATTER TO ANALYZE SOME QUESTIONS IN THE CASE; IS THAT RIGHT?

03:28:17 8   A.   THAT'S RIGHT.

03:28:18 9   Q.   AND YOU WERE INFORMED ABOUT CISCO'S ASSERTIONS OF

03:28:23 10   COPYRIGHT INFRINGEMENT?

03:28:23 11   A.   YES, I WAS.

03:28:25 12   Q.   AND CAN YOU TELL US, GENERALLY, WHAT WERE YOU ASKED TO

03:28:28 13   ANALYZE FOR THIS CASE?

03:28:30 14   A.   SURE. SO THERE ARE TWO MAIN THINGS I WAS ASKED TO DO.

03:28:34 15   ONE WAS TO LOOK AT CISCO'S ASSERTED ELEMENTS AND DETERMINE

03:28:39 16   THEIR ORIGINALITY AND TO WHAT EXTENT THEY HAVE BEEN USED ACROSS

03:28:42 17   THE INDUSTRY.

03:28:43 18   AND THEN THE SECOND ASSIGNMENT WAS TO LOOK AT THIS IDEA

03:28:46 19   CALLED FAIR USE, WHICH IS A LEGAL CONCEPT, AND IT'S GOT FOUR

03:28:51 20   FACTORS, AND I WAS TO CONSIDER THOSE FOUR FACTORS IN PERFORMING

03:28:57 21   AN ANALYSIS.

03:28:57 22   Q.   AND WE ARE GOING TO GO THROUGH YOUR ANALYSIS IN DETAIL

03:29:00 23   THIS AFTERNOON, BUT BEFORE WE GO THERE, CAN YOU SUMMARIZE WHAT

03:29:05 24   CONCLUSIONS YOU REACHED FROM YOUR ANALYSIS?

03:29:09 25   A.   SURE.

03:29:10   1   SO ON THE FIRST QUESTION, I LOOKED CAREFULLY AT CISCO'S

03:29:14   2   ASSERTED ELEMENTS IN ITS CLI. AND I FOUND THAT THE MAJORITY OF

03:29:19   3   THOSE ELEMENTS EXISTED IN LEGACY OPERATING SYSTEMS OR OLDER

03:29:25   4   CLI'S OR THEY WERE TAKEN STRAIGHT OUT OF THESE INDUSTRY

03:29:30   5   STANDARD DOCUMENTS PRODUCED BY THE IEEE OR THE ITEF.

03:29:34   6   AND TO THE EXTENT THAT CISCO HAD OPTIONS, CHOICES IT COULD

03:29:38   7   MAKE ABOUT WHAT TERMS IT CHOSE, THOSE OPTIONS WERE USUALLY FROM

03:29:43   8   A VERY SMALL SET OF CHOICES.

03:29:46   9   ON THE WIDESPREAD ANALYSIS QUESTION, I LOOKED AT A WIDE

03:29:50   10   VARIETY OF VENDORS, COMPANIES YOU'VE PROBABLY HEARD OF LIKE

03:29:54   11   BROCADE, IBM, JUNIPER, DELL AND SO FORTH, AND I FOUND THAT

03:29:58   12   HUNDREDS OF THE ASSERTED COMMANDS WERE FOUND IN THESE OTHER

03:30:05   13   VENDORS PRODUCTS, SOMETIMES 10, 15 OR MORE IN THE COMMONLY USED

03:30:10   14   COMMANDS.

03:30:11   15   AND THEN ON THE FAIR USE QUESTION, I CONSIDERED THOSE FOUR

03:30:14   16   FACTORS I JUST TALKED ABOUT A MINUTE AGO, AND I DETERMINED THAT

03:30:17   17   ARISTA USED A SMALL PORTION OF CISCO'S COMMAND-LINE INTERFACE,

03:30:20   18   WHICH IS A FACTUAL, FUNCTIONAL OBJECT, AND IT DID SO IN A

03:30:25   19   HIGHLY TRANSFORMATIVE WAY.

03:30:27   20   ARISTA ADDED THOUSANDS MORE COMMANDS, IT DEVELOPED NEW

03:30:32   21   HARDWARE, IT DEVELOPED A NEW OPERATING SYSTEM CALLED EOS, AND

03:30:36   22   IT USHERED IN A NEW PARADIGM.

03:30:39   23   AND MY OPINION, THEREFORE, IS THAT THIS AN ANNOUNCES AND

03:30:42   24   SUPPORTS AND FINDING THAT ARISTA'S USE IS A FAIR USE.

03:30:45   25   Q.   OKAY. THANK YOU.

03:30:48 1   CAN YOU DESCRIBE FOR THE JURY THE SORT OF MATERIALS THAT

03:30:54 2   YOU REVIEWED IN ORDER TO CONDUCT THIS ANALYSIS?

03:30:58 3   A.   THERE WAS A LOT.

03:30:59 4   SO WE HAD ALL OF THE DISCLOSED MATERIALS, LOTS OF USER

03:31:03 5   MANUALS, DEPOSITIONS OF WITNESSES, SOURCE CODE FROM ARISTA,

03:31:08 6   FROM CISCO, FROM STANFORD, SOURCE CODE I WROTE MYSELF. I DID

03:31:12 7   SOME ADDITIONAL RESEARCH, AND I CONSIDERED ALL OF THAT IN

03:31:15 8   FORMULATING MY OPINIONS.

03:31:17 9   Q.   DID YOU -- WERE YOU ABLE TO USE THE SWITCHES FROM EITHER

03:31:23 10   CISCO OR ARISTA IN YOUR ANALYSIS?

03:31:25 11   A.   YEAH, I HAVE ONE OF EACH IN MY LIVING ROOM RIGHT NOW.

03:31:28 12   Q.   OKAY. AND APPROXIMATELY HOW MANY HOURS, IN TOTAL, DID YOU

03:31:32 13   SPEND ON THE ANALYSIS TO REACH THE OPINIONS YOU ARE PREPARED TO

03:31:36 14   GIVE TODAY?

03:31:36 15   A.   LAST TIME I LOOKED, IT WAS OVER A THOUSAND HOURS.

03:31:43 16   Q.   SO LET'S TURN TO THE CLI COMMANDS THAT ARE ASSERTED IN THE

03:31:49 17   CASE.

03:31:51 18   AND THE JURY HAS HEARD A LOT ABOUT THESE, BUT IF YOU COULD

03:31:55 19   GO BACK TO SORT OF THE FIRST BASE, IF YOU WILL, ON IT. AND

03:32:01 20   TELL US WHAT DOES A CLI COMMAND DO?

03:32:04 21   A.   I MEAN, A CLI IS THE MOST BASIC FORM OF COMPUTER

03:32:08 22   INTERFACE. YOU TYPE IN A COMMAND, YOU HIT ENTER OR RETURN, AND

03:32:12 23   SOMETIMES IT JUST DOES IT AND DOESN'T SAYING ANY, IT JUST GIVES

03:32:15 24   YOU ANOTHER PROMPT.

03:32:16 25   SOME COMMANDS EMIT A RESPONSE, AN OUTPUT ON THE SCREEN,

03:32:20 1   AND IT SCROLLS UP AND YOU READ THAT OUTPUT.

03:32:23 2   Q.   HAVE YOU EVER USED AN ANALOGY TO REFER TO A CLI COMMAND?

03:32:28 3   A.   SURE.

03:32:29 4   SO I MEAN, WE COMMONLY REFER TO THESE THINGS AS KNOBS.

03:32:32 5   AND THE REASON IS BECAUSE IT'S ANALOGOUS TO AN OLD STYLE STEREO

03:32:36 6   WHERE YOU'VE GOT ON-OFF BUTTON AND VOLUME AND TUNER KNOBS AND

03:32:42 7   SO FORTH.

03:32:42 8   IN ESSENCE, WHEN YOU ARE USING THE CLI, YOU ARE PUSHING

03:32:45 9   BUTTONS AND TURNING KNOBS. PERHAPS SOME PEOPLE CALL THE MORE

03:32:50 10   OBSCURE FEATURES "NERD KNOBS."

03:32:53 11   Q.   AND I THINK YOU HAVE SOME PHOTOS PREPARED TO SHOW THE JURY

03:32:56 12   ABOUT HISTORICAL COMMANDS AND USE OF COMMAND LINE; IS THAT

03:33:01 13   RIGHT?

03:33:01 14   A.   RIGHT, YEAH.

03:33:02 15   Q.   OKAY. CAN YOU EXPLAIN WHAT IS SHOWN HERE, DR. BLACK?

03:33:10 16   A.   SURE, THIS IS A PDP10. THIS WAS MADE BY DIGITAL EQUIPMENT

03:33:17 17   CORPORATION. THIS IS LIKE A SMARTPHONE IN YOUR POCKETS, A

03:33:19 18   THOUSAND TIMES FASTER.

03:33:20 19   THIS IS THE KIND OF MACHINE THAT I TOOK THE BUS UP TO THE

03:33:23 20   LAWRENCE HALL OF SCIENCE AND USED. AND WHEN YOU USED THIS

03:33:26 21   MACHINE, YOU DIDN'T SIT IN FRONT OF IT, YOU SAT IN FRONT OF A

03:33:30 22   TELETYPE, WHICH IS ACTUALLY -- ON THE NEXT SLIDE -- WHICH IS

03:33:32 23   ACTUALLY A PRINTER AND A KEYBOARD.

03:33:34 24   AND YOU TYPE YOUR CLI COMMAND IN AND IT WOULD CHUG AWAY

03:33:37 25   AND EMIT THE OUTPUT ON PAPER AND SCROLL UP. AND THE COOL THING

03:35:04   1   AFTER THAT, I WENT TO HAYWARD. STARTED MY UNDER GRAD.

03:35:08   2   HERE WE USED UNIX. I THINK UNIX HAS BEEN MENTIONED A FEW TIMES

03:35:13   3   DURING THE TRIAL. THIS IS A CLI ALSO.

03:35:15   4   AND THEN FINALLY -- OH, NOT FINALLY. RIGHT AROUND, I

03:35:22   5   GUESS THIS IS ABOUT 1985, '88, CLI'S WERE PRETTY MUCH HOW YOU

03:35:29   6   USED COMPUTERS BACK THEN. GUI'S DIDN'T REALLY BECOME PREVALENT

03:35:33   7   AND UBIQUITOUS UNTIL A FEW YEARS OR A DECADE LATER.

03:35:37   8   Q.   OKAY. DR. BLACK, TURNING TO THE ASSERTED CLI ELEMENTS IN

03:35:41   9   THIS CASE, DID YOU ANALYZE THOSE ELEMENTS TO ATTEMPT TO

03:35:47 10   DETERMINE WHERE THEY MIGHT HAVE ORIGINATED?

03:35:50 11   A.   YEAH, I DID.

03:35:51 12   Q.   AND WHAT DID YOU CONCLUDE?

03:35:54 13   A.   WELL, I OUTLINED THIS EARLIER THAT THERE WERE VARIOUS

03:35:57 14   SOURCES FOR WHERE THE EARLY CISCO ENGINEERS WOULD COULD HAVE

03:36:03 15   TAKEN THEM -- ACTUALLY, WOULD IT BE OKAY IF --

03:36:06 16   MR. FERRALL: IF YOUR HONOR WOULD PERMIT DR. BLACK

03:36:08 17   TO --

03:36:09 18   THE COURT: YES, JUST KEEP YOUR VOICE UP SO WE CAN

03:36:12 19   HEAR YOU.

03:36:12 20   THE WITNESS: I WILL. I WILL TRY.

03:36:24 21   SO BROADLY TAKEN, THERE ARE BASICALLY THREE DIFFERENT

03:36:27 22   PLACES YOU MIGHT TAKE COMMAND TERMS THAT EXISTED BEFORE CISCO

03:36:32 23   WAS FOUNDED.

03:36:34 24   ONE WOULD BE LEGACY CLI'S, THESE ONES THAT WE JUST LOOKED

03:36:39 25   AT A MOMENT AGO. AND THESE WERE FULL OF TERMS, OF COURSE. AND

03:36:48   1   I'M GOING TO USE DIFFERENT COLORS FOR A REASON HERE.

03:36:51   2   AND THEN THERE WERE JUST TERMS THAT PEOPLE IN THE

03:36:53   3   NETWORKING INDUSTRY ALREADY KNEW, WORDS LIKE NETWORK, HOST,

03:36:57   4   INTERFACE, COUNTERS, TIME OUT, THAT KIND OF THING.

03:37:00   5   SO I WOULD CALL THESE COMMON NETWORKING TERMS.

03:37:10   6   AND THEN THE FINAL CATEGORY IS THIS BODY OF PROTOCOL NAMES

03:37:15   7   AND THE TERMS INSIDE THE PROTOCOL SPECIFICATIONS THAT CAME OUT

03:37:20   8   OF PRIMARILY THE ITEF AND THE IEEE. SO I WILL CALL THOSE

03:37:27   9   INDUSTRY STANDARD TERMS.

03:37:30   10   AND THESE ARE THINGS LIKE BGP AND OSPF AND IP AND TCP.

03:37:39   11   AND THE MAJORITY OF THE TERMS USED IN CISCO'S CLI FROM COME

03:37:43   12   THESE THREE SOURCES.

03:37:45   13   MR. FERRALL: THANK YOU.

03:37:49   14   Q.   NOW DR. BLACK, WERE YOU AWARE OF ANY EVIDENCE FROM THE

03:38:06   15   CASE, FROM DEPOSITIONS OR OTHER DISCOVERY EXCHANGED IN THE

03:38:11   16   CASE, THAT SUPPORTED YOUR IDEA THAT SOME OF THESE CLI COMMANDS

03:38:16   17   CAME FROM PRIOR OPERATING SYSTEMS?

03:38:19   18   A.   CERTAINLY. I MEAN, I THINK MR. LOUGHEED TESTIFIED LAST

03:38:23   19   WEEK THAT HE HAD EXPERIENCE WITH TOPS 20 AND THAT HE WAS

03:38:28   20   INSPIRED BY SOME OF THE ELEMENTS IN TOPS 20 WHEN HE WROTE THE

03:38:32   21   FIRST VERSION OF CISCO'S IOS.

03:38:35   22   WE'VE ALSO -- WELL, MAYBE WE HAVEN'T, BUT I'VE READ

03:38:38   23   DEPOSITION TESTIMONY FROM CISCO EMPLOYEES WHO CREATED SOME OF

03:38:42   24   THE COMMANDS THAT ARE AT ISSUE IN THIS CASE, AND THEY SAID, FOR

03:38:45   25   EXAMPLE, WHEN THE PERSON, I THINK HER NAME WAS TONG LIU, WROTE

03:38:50 1   THE PTP COMMANDS, THAT'S PRECISION TIME PROTOCOL, THAT SHE

03:38:54 2   LOOKED TO THE RFC THAT -- OR IN THAT CASE THE IEEE DOCUMENT

03:38:58 3   THAT SPECIFIED WHAT'S THE NAME OF THE PROTOCOL, WHAT ARE THE

03:39:02 4   NAMES OF THE TERMS. AND SHE INDUCTED THOSE, BROUGHT THOSE INTO

03:39:07 5   THE CISCO CLI, AND THERE'S LOTS OF TESTIMONY ALONG THOSE LINES.

03:39:10 6   Q.   ALL RIGHT. IF WE COULD TURN TO EXHIBIT 6581 IN YOUR

03:39:15 7   BINDER, THERE'S SOME BINDERS UP THERE.

03:39:21 8   A.   UP HERE?

03:39:22 9   Q.   YES.

03:39:23 10   A.   I'M SORRY, 6581?

03:39:25 11   Q.   THEY SHOULD BE LABELED ON THE BINDER EDGE THERE.

03:39:31 12   A.   I'M WITH YOU. OKAY.

03:39:41 13   Q.   DO YOU RECOGNIZE 6581?

03:39:45 14   A.   YEAH. I'VE SEEN IT BEFORE.

03:39:46 15   Q.   WHAT IS THIS?

03:39:47 16   A.   THIS IS A MANUAL FOR WHAT'S CALLED DECK NET.

03:39:53 17   Q.   IS THIS ONE OF THE MANUALS YOU REVIEWED TO DETERMINE

03:39:55 18   POSSIBLE ORIGINS OF THE ASSERTED CLI COMMANDS?

03:39:58 19   A.   YES, IT IS.

03:39:59 20   Q.   ALL RIGHT.

03:40:00 21   MR. FERRALL: YOUR HONOR, I MOVE 6581 INTO EVIDENCE.

03:40:03 22   MR. NELSON: NO OBJECTION YOUR HONOR.

03:40:04 23   THE COURT: IT WILL BE ADMITTED.

03:40:13 24   (DEFENDANT'S EXHIBIT 6581 WAS ADMITTED INTO EVIDENCE.)

03:40:13 25   BY MR. PAK:

03:40:14   1   Q.   DO YOU RECALL, DR. BLACK, THE APPROXIMATE VINTAGE, WHEN

03:40:16   2   THIS MANUAL CAME OUT?

03:40:18   3   A.   IT'S 1980.

03:40:20   4   Q.   AND DEC IS DIGITAL EQUIPMENT CORPORATION; IS THAT RIGHT?

03:40:22   5   A.   THAT'S RIGHT.

03:40:24   6   Q.   IF WE COULD GO TO PAGE 35 OF THIS MANUAL, PLEASE.

03:40:33   7   A.   I'M THERE.

03:40:35   8   Q.   CAN YOU EXPLAIN TO THE JURY WHAT YOU FOUND HERE THAT'S

03:40:41   9   RELATED TO THE ASSERTED CLI COMMANDS?

03:40:44   10   A.   SURE.

03:40:44   11   SO THIS MANUAL IS A REFERENCE MANUAL THAT GIVES LOTS OF

03:40:48   12   DIFFERENT CLI COMMANDS. AND HERE YOU CAN SEE THAT THERE IS A

03:40:52   13   COMMAND CALLED "SHOW," RIGHT AROUND THE MIDDLE OF THE PAGE

03:40:57   14   THERE.

03:40:58   15   AND THAT "SHOW" HAS VARIOUS OTHER WORDS, COMMAND WORDS

03:41:00   16   THAT CAN FOLLOW IT. I THINK IT'S CODED AS "ENTITY" HERE, THEN

03:41:06   17   THE ENTITIES ARE LISTED BELOW THAT AS ACTIVE LINES, ACTIVE

03:41:10   18   LOGGING AND SO FORTH.

03:41:11   19   Q.   AND HOW, IF AT ALL, DID THAT RELATE TO THE ASSERTED CLI

03:41:15   20   COMMANDS IN THIS CASE?

03:41:17   21   A.   SO THERE ARE 506 TOTAL ASSERTED COMMANDS, I THINK IN THE

03:41:24   22   NEIGHBORHOOD OF 150 OF THEM FOLLOW THE SAME SORT OF PATTERN.

03:41:27   23   THEY START WITH THE WORD "SHOW," THEN THEY NAME SOMETHING

03:41:31   24   TO BE SHOWN RIGHT AFTER THAT.

03:41:33   25   Q.   AND ARE YOU FAMILIAR WITH ANOTHER OPERATING SYSTEM CALLED

03:41:39   1   QPR?

03:41:40   2   A.   I THINK IT'S OPR.

03:41:41   3   Q.   OPR, SORRY.

03:41:43   4   A.   I'VE NEVER PERSONALLY USED IT. IT WAS THE CLI THAT

03:41:46   5   MR. LOUGHEED TESTIFIED THAT HE HAD USED AS PART OF THE QUASAR

03:41:50   6   PRINT SYSTEM, AND HE TESTIFIED THAT THERE WAS A SHOW COMMAND

03:41:54   7   THERE AS WELL.

03:41:55   8   Q.   THAT WAS WHAT MR. LOUGHEED USED BEFORE HE JOINED CISCO?

03:42:00   9   A.   MY UNDERSTANDING WAS THAT WAS AT STANFORD, YES.

03:42:03   10   Q.   NOW HAVE YOU LOOKED AT OTHER MANUALS IN ADDITION TO THIS

03:42:10   11   DEC NET MANUAL?

03:42:11   12   A.   YEAH, I LOOKED AT A NUMBER OF OTHER MANUALS, ONE FOR RSX

03:42:17   13   11 AND ANOTHER ONE FOR VMS AND MANUALS IN THIS TIMEFRAME.

03:42:23   14   Q.   DID YOU LOOK AT ANYTHING FOR TOPS 20?

03:42:26   15   A.   YEAH. THERE'S A TOPS 20 MANUAL I LOOKED AT, THAT I THINK

03:42:29   16   IS AROUND HERE.

03:42:30   17   Q.   OKAY. WELL, WHAT I WOULD LIKE TO DO IS, IF POSSIBLE, SHOW

03:42:35   18   NOW A SUMMARY OF THE FINDINGS THAT YOU GATHERED FROM YOUR

03:42:41   19   REVIEW OF PRIOR OPERATING SYSTEMS?

03:42:43   20   A.   SURE.

03:42:43   21   Q.   OKAY. IF WE COULD PULL UP SLIDE 11.

03:42:50   22   CAN YOU EXPLAIN WHAT THIS IS?

03:42:51   23   A.   SURE.

03:42:52   24   SO CORRESPONDING TO THAT BROWN BUBBLE ON MY AMAZING

03:42:58   25   DRAWING OVER THERE, THESE ARE WORDS THAT I FOUND IN MANUALS

03:43:02 1   FROM LEGACY CLI'S, CLI PRODUCTS THAT PRE-DATE CISCO, AND THAT

03:43:07 2   ARE AMONG THE TERMS USED BY CISCO'S CLI IN THE ASSERTED

03:43:12 3   COMMANDS.

03:43:13 4   Q.   AND I THINK YOU SAID THAT THERE'S OVER 150 "SHOW"

03:43:18 5   COMMANDS. WHAT ABOUT "CLEAR," DO YOU REMEMBER HOW MANY OF THE

03:43:21 6   ASSERTED COMMANDS IN THIS CASE USE "CLEAR?"

03:43:27 7   A.   NOT A FAN, IT WAS FAR FEWER, MAYBE 10 OR 20.

03:43:36 8   Q.   NOW DID YOU PERFORM A SIMILAR ANALYSIS REGARDING THE

03:43:39 9   ASSERTED MODES IN THE CASE?

03:43:41 10   A.   YEAH. SO JUST TO REMIND EVERYONE, THE MODES ARE THESE

03:43:50 11   THINGS THAT ARE NAMED LIKE USER, EXEC, PRIVILEGED EXEC, CONFIG,

03:43:56 12   INTERFACE CONFIG, AND THEY COME WITH PROMPTS IN THE ANGLED

03:44:00 13   BRACKETS, AND THE POUND.

03:44:01 14   Q.   AND WE HAVE A SLIDE THAT SUMMARIZES YOUR FINDINGS WITH

03:44:04 15   RESPECT TO MODES?

03:44:05 16   A.   WE DO.

03:44:05 17   Q.   AND LET'S PUT THAT UP.

03:44:07 18   BUT BEFORE WE TALK ABOUT IT, LET ME ASK YOU, WHERE DID YOU

03:44:10 19   FIND YOUR BASIS FOR YOUR OPINION REGARDING THE PRESENCE OF

03:44:15 20   THESE MODES IN PRIOR OPERATING SYSTEMS?

03:44:17 21   A.   I MEAN, ONCE AGAIN, I AM FAMILIAR WITH THESE OLD CLI'S, I

03:44:21 22   USED THEM PERSONALLY, BUT I ALSO LOOKED IN THE MANUALS THAT WE

03:44:26 23   TALKED ABOUT.

03:44:26 24   Q.   OKAY. LET'S PULL UP SLIDE 14, PLEASE.

03:44:31 25   CAN YOU EXPLAIN WHAT IS SHOWING HERE.

03:44:34 1   A.   SURE.

03:44:35 2   SO THE CLI IN TOPS 20 IS CALLED EXEC. AND CISCO'S BASIC

03:44:40 3   LOWEST LEVEL MODE IS CALLED USER EXEC. AND MR. LOUGHEED HAS

03:44:44 4   TESTIFIED THAT HE WAS INSPIRED BY THAT WHEN HE CREATED CISCO'S

03:44:48 5   PRODUCT. THE PRIVILEGED MODES, THE IDEA OF HAVING A PRIVILEGED

03:44:52 6   MODE WHERE YOU GET SUPER POWERS, ELEVATED PRIVILEGES, THAT WAS

03:44:57 7   IN TOPS 20, IT'S ALSO A CONCEPT IN UNIX WHICH IS STILL AROUND

03:45:01 8   AND STILL HAS THAT CONCEPT.

03:45:02 9   THE ANGLE BRACKET PROMPT THAT'S USED IN CISCO'S

03:45:06 10   UNPRIVILEGED MODE, THAT WAS IN CP/M, USED IN CP/M AND IT IS

03:45:12 11   USED IN MS-DOS, STILL TO THIS DAY.

03:45:14 12   THEN THE PRIVILEGED MODE PROMPT IS THIS HASH MARK, POUND

03:45:19 13   SIGN, AND THAT WAS IN UNIX SINCE THE 60'S.

03:45:22 14   Q.   ALL RIGHT. I NEGLECTED TO ASK YOU TO -- I WOULD LIKE TO

03:45:30 15   GO BACK TO SLIDE 11 BECAUSE I JUST WANT TO MAKE SURE THE RECORD

03:45:33 16   IS CLEAR.

03:45:41 17   CAN YOU JUST READ INTO THE RECORD, DR. BLACK, THE TERMS

03:45:44 18   THAT YOU FOUND FROM PRIOR OPERATING SYSTEMS?

03:45:45 19   A.   YOU WANT ME TO READ EVERYTHING ON THE SLIDE?

03:45:47 20   Q.   PLEASE.

03:45:48 21   A.   BANNER, BOOT, CLEAR, CLOCK, ENABLE, ERASE, LENGTH, LOAD,

03:45:53 22   MOTD, NO, SET, SHOW, AND TERMINAL.

03:46:06 23   Q.   THANK YOU.

03:46:08 24   NOW LET'S TURN TO YOUR SECOND CIRCLE, THE BLUE CIRCLE,

03:46:12 25   COMMON NETWORKING TERMS.

03:46:14 1   A.   OKAY.

03:46:15 2   Q.   WHAT DID YOU DO TO REACH A CONCLUSION ABOUT THE COMMON

03:46:18 3   PRESENCE OF NETWORKING TERMS?

03:46:19 4   A.   THAT WAS MORE OF A JUDGMENT CALL. AND, YOU KNOW, IF I

03:46:24 5   BELIEVE THAT I HEARD PEOPLE SAY IT AND USE IT AND IT'S PART OF

03:46:28 6   THE LEXICON, THINGS LIKE "HOST" AND "NETWORK" AND "INTERFACES,"

03:46:31 7   THEN I COLORED IT BLUE OR I DEEMED IT TO BE IN THE BLUE CIRCLE.

03:46:37 8   Q.   ALL RIGHT. AND I THINK WE HAVE A SLIDE OF THE TERMS THAT

03:46:40 9   YOU CONCLUDED WERE COMMON NETWORKING TERMS. IF WE COULD PULL

03:46:44 10   UP SLIDE 17.

03:46:54 11   IT'S A LITTLE BIT HARD TO SEE. BUT APPROXIMATELY HOW MANY

03:46:58 12   TERMS HERE DID YOU CONCLUDE WERE COMMON NETWORKING TERMS?

03:47:02 13   A.   IT LOOKS LIKE MAYBE 70 OR 80.

03:47:10 14   Q.   AND DID YOU SEE ANY EVIDENCE IN THE RECORD, AGAIN FROM

03:47:14 15   DISCOVERY, ABOUT HOW COMMON NETWORKING TERMS WERE ACTUALLY USED

03:47:17 16   BY CISCO ENGINEERS IN DEVISING CLI COMMANDS?

03:47:22 17   A.   YEAH. I MEAN, THE ENGINEERS TESTIFIED THAT THEY WANTED TO

03:47:26 18   USE TERMS THAT WERE FAMILIAR TO THEIR USERS, AND THEIR USERS

03:47:29 19   ARE NETWORK ENGINEERS.

03:47:30 20   AND SO SOME OF THESE TERMS MIGHT LOOK PRETTY CRAZY LIKE

03:47:34 21   THAT'S NOT A COMMON TERM, BUT THINGS LIKE, I DON'T KNOW, REGEX,

03:47:41 22   WHICH APPEARS IN THE LIST HERE, IT LOOKS LIKE IT'S GREEK, BUT

03:47:43 23   IT'S ACTUALLY A COMMON TERM USED THROUGHOUT COMPUTER SCIENCE.

03:47:48 24   IT MEANS REGULAR EXPRESSION.

03:47:50 25   WHEN YOU GO TO SCHOOL AND YOU TAKE ONE OF MY CLASSES, OR

03:47:52 1   SOME OF MY CLASSES, YOU LEARN WHAT THAT MEANS.

03:47:55 2   Q.   AND OTHERS, I SUPPOSE, ARE LESS CONTROVERSIAL LIKE "LOGIN"

03:47:59 3   OR "LINK;" IS THAT FAIR?

03:48:01 4   A.   YEAH.   I MEAN SOME OF THEM ARE LIKE "RUN" OR "OUT" OR

03:48:05 5   "USERS," OR "IN," THOSE, I THINK, ARE CLEARLY IN COMMON USE.

03:48:14 6   Q.   OKAY.   I'M NOT GOING TO ASK YOU TO READ ALL OF THESE INTO

03:48:18 7   THE RECORD.

03:48:18 8   A.   THANK YOU.

03:48:19 9   Q.   NOW YOUR THIRD CATEGORY IN GREEN WAS INDUSTRY STANDARD

03:48:22 10   TERMS.

03:48:22 11   CAN YOU EXPLAIN WHAT YOU DID TO ANALYZE THE EXTENT TO

03:48:27 12   WHICH THE ASSERTED CLI ELEMENTS USED INDUSTRY STANDARD TERMS?

03:48:31 13   A.   SURE.

03:48:33 14   SO I MEAN, I RECOGNIZED -- IF YOU LOOK AT THIS LIST OF 506

03:48:37 15   COMMANDS, A LOT OF THEM ARE NAMING PROTOCOLS AND NAMING TERMS

03:48:43 16   WITHIN THOSE PROTOCOLS WHICH I IMMEDIATELY RECOGNIZED BECAUSE I

03:48:46 17   READ A LOT OF THESE STANDARDS PRIOR TO MY ENGAGEMENT IN THE

03:48:49 18   CASE.

03:48:50 19   BUT IN ORDER TO CONDUCT BY ANALYSIS, I WENT TO THE

03:48:52 20   SPECIFICATIONS FOR THOSE PROTOCOLS.   AND IN THE ITEF, IT'S

03:48:55 21   CALLED AN RFC, WE'VE HEARD ABOUT THAT A BUNCH.   IN THE IEEE,

03:49:00 22   THE SPEC STARTED WITH 802.SOMETHING.

03:49:04 23   SO I LOOKED AT THOSE SPECIFICATIONS TO FIND TERMS THAT LAY

03:49:08 24   WITHIN THEM.

03:49:08 25   Q.   AND CAN YOU TELL ME, IN GENERAL, WE WILL GET INTO SOME

03:49:12 1   SPECIFICS, BUT IN GENERAL, WHAT DID YOU FIND?

03:49:16 2   A.   I FOUND FOR THE VAST MAJORITY OF TERMS IN THE ACCUSED CLI

03:49:21 3   COMMAND, THEY COULD BE FOUND IN THE TITLE AND IN THE CONTENTS

03:49:25 4   OF THE INDUSTRY STANDARD SPECIFICATIONS.

03:49:28 5   Q.   ALL RIGHT. NOW I WOULD LIKE TO PULL UP SLIDE 19, PLEASE.

03:49:39 6   WHAT DO YOU UNDERSTAND THIS TO BE, DR. BLACK?

03:49:42 7   A.   THESE ARE SOME DOT1X COMMANDS. SO THIS IS IEEE. AND AS I

03:49:49 8   JUST SAID THEY START WITH 802. SO THIS IS WRITTEN 802 DOT1X

03:49:54 9   BUT PEOPLE CALL IT DOT1X FOR SHORT. AND THIS IS ACTUALLY A

03:49:59 10   SECURITY PROTOCOL. THE THIRD ONE DOWN HERE WHICH IS DOT1X

03:50:03 11   SYSTEM AUTH CONTROL. THAT TURNS ON THE FEATURE. SO THAT'S

03:50:06 12   LIKE A BUTTON, YOU TYPE IT IN AND THAT IT TURNS IT ON.

03:50:11 13   AND THEN THE SECOND ONE, DOT1X RE-AUTHENTICATION FEATURE,

03:50:16 14   THAT TURNS ON THE RE-AUTHENTICATION FEATURE, LIKE ANOTHER

03:50:18 15   BUTTON.

03:50:19 16   AND THEN THE BOTTOM THREE ARE LIKE KNOBS, YOU SET AN

03:50:22 17   INTERVAL AND A NUMBER OF SECONDS THAT YOU WANT THE CERTAIN

03:50:24 18   FEATURE TO BE INVOKED.

03:50:25 19   Q.   AND ARE ALL OF THESE ASSERTED COMMANDS IN THE CASE?

03:50:28 20   A.   I BELIEVE ALL SIX ARE, YES.

03:50:30 21   Q.   ALL RIGHT. AND IS THERE A SPECIFICATION FOR DOT1X?

03:50:36 22   A.   YES, IT'S THE 802 DOT1X SPECIFICATION.

03:50:41 23   Q.   APTLY NAMED. IF YOU COULD LOOK AT 6801 IN YOUR BINDER.

03:51:02 24   A.   I HAVE IT.

03:51:02 25   Q.   IS THAT THE 802 DOT1X SPECIFICATION, AT LEAST AS OF 2001?

03:51:08   1   A.   YES IT IS.

03:51:09   2   MR. FERRALL: YOUR HONOR, I WOULD MOVE EXHIBIT 6801

03:51:11   3   IN EVIDENCE.

03:51:12   4   MR. NELSON: NO OBJECTION.

03:51:13   5   THE COURT: IT WILL BE ADMITTED.

03:51:14   6   (DEFENDANT'S EXHIBIT 6801 WAS ADMITTED INTO EVIDENCE.)

03:51:14   7   BY MR. FERRALL:

03:51:44   8   Q.   SO DR. BLACK, IF WE GO TO I THINK THE PAGE ENDING 593 IN

03:51:53   9   THE EXHIBIT 6801?

03:51:56   10   A.   I SEE IT.

03:51:57   11   Q.   ALL RIGHT. CAN YOU TELL US WHAT YOU FOUND HERE REGARDING

03:52:03   12   THE FIRST CLI COMMAND IN THIS LIST?

03:52:05   13   A.   YEAH. SO I MEAN, PAE MEANS PORT ACCESS ENTITY. YOU CAN

03:52:10   14   SEE THAT ACRONYM ON THE PAGE IN VARIOUS PLACES. AND THEN ON

03:52:15   15   831 YOU SEE THE WORD AUTHENTICATOR, WHICH IS ALSO THE THIRD

03:52:19   16   TERM IN THE ASSERTED COMMAND.

03:52:21   17   Q.   IS AUTHENTICATOR A FUNCTION OR A FEATURE THAT IS EXPLAINED

03:52:26   18   IN THE 802 DOT1X STANDARD ITSELF?

03:52:31   19   A.   YEAH. THERE ARE THREE ACTORS IN 8021X. THERE'S THE

03:52:39   20   SUPPLICANT AUTHENTICATOR AND THE AUTHENTICATION SERVER, SO IT'S

03:52:41   21   THE MIDDLE OF THOSE THREE.

03:52:42   22   Q.   IS THE TERM "AUTHENTICATOR" IN THE CISCO CLI COMMAND, IS

03:52:47   23   THAT USED IN THE SAME WAY AS IT'S USED IN THE SPECIFICATION?

03:52:51   24   A.   YES, IT IS.

03:52:52   25   Q.   ALL RIGHT. LET'S LOOK AT THE DOT1X RE-AUTHENTICATION

03:52:57	1	COMMAND, AND IF WE COULD GO TO PAGE ENDING IN 615.
03:53:11	2	DR. BLACK, CAN YOU TELL US WHAT'S ON THIS PAGE REGARDING
03:53:15	3	THE SECOND COMMAND HERE?
03:53:16	4	A. YEAH. SO THAT ONE IS A LITTLE SIMPLER. IT SAYS
03:53:20	5	"RE-AUTHENTICATION" AND THERE'S A HEADING THAT TALKS ABOUT THAT
03:53:22	6	FEATURE, THE RE-AUTHENTICATION FEATURE, WHICH IS THE ONE THAT
03:53:25	7	SAYS I'VE GOT TO KEEP ASKING FOR YOUR PASSWORD, OVER, AND OVER,
03:53:29	8	AND OVER ON AN INTERVAL, THAT'S WHAT IT'S DOING.
03:53:32	9	Q. IS THERE ANOTHER COMMAND YOU WOULD LIKE TO EXPLAIN TO THE
03:53:35	10	JURY, I WILL LET YOU PICK THE NEXT ONE.
03:53:38	11	A. OH, GEEZ. YOU WANT ME TO JUST PICK FROM THE LIST HERE?
03:53:46	12	Q. YEAH, WHICH ONE DO YOU WANT TO TALK ABOUT?
03:53:47	13	A. TIMEOUT QUIET-PERIOD.
03:53:52	14	Q. OKAY. SO I THINK THAT ONE -- LET'S GO TO PAGE 609.
03:54:07	15	MR. DAHM? OKAY. SORRY.
03:54:07	16	THE COURT: HE'S HAVING A TIME OUT QUIET PERIOD.
03:54:13	17	THE WITNESS: OKAY. SO THAT ONE WAS -- WHAT DID I
03:54:15	18	CHOOSE? TIME OUT QUIET PERIOD?
03:54:17	19	OKAY. IN THE MIDDLE OF THE PAGE THERE, THERE'S A HEADING
03:54:23	20	IT'S QUIET PERIOD, WHICH IS THE AMOUNT OF TIME TO WAIT BEFORE
03:54:26	21	NAGGING SOMEONE AGAIN.
03:54:28	22	AND IT'S SPELLED WITH DIFFERENT CAPITALIZATION AND THERE'S
03:54:31	23	NO HYPHEN, BUT IN THE CISCO VERSION THERE IS.
03:54:35	24	Q. DOES CAPITALIZATION MATTER IN A PARSER, TO YOUR KNOWLEDGE?
03:54:39	25	A. IT DEPENDS ON THE PARSER.

03:54:40 1   FOR CISCO AND ARISTA AND THE OTHER ONES I'VE USED, IT'S

03:54:45 2 CASE INSENSITIVE WHICH MEAN ITS DOESN'T MATTER IF IT'S UPPER OR

03:54:49 3 LOWER. IN CERTAIN OTHER CONTEXT, IT CAN MATTER.

03:54:55 4 Q.   NOW DID YOU DO THIS SORT OF ANALYSIS FOR OTHER INDUSTRY

03:55:02 5 STANDARD PUBLICATIONS IN ADDITION TO DOT1X?

03:55:04 6 A.   YEAH, I LOOKED AT A LARGE NUMBER OF THEM, IN FACT.

03:55:07 7 Q.   DO YOU HAVE ANY ESTIMATE OF HOW MANY STANDARDS YOU LOOKED

03:55:10 8 AT?

03:55:10 9 A.   OH, WOW, 30 OR 40, MAYBE.

03:55:16 10 Q.   DID YOU LOOK AT A STANDARD FOR OSPF, FOR EXAMPLE?

03:55:22 11 A.   YES.

03:55:22 12 Q.   ALL RIGHT. CAN YOU LOOK AT EXHIBIT 6817 IN YOUR BINDER.

03:55:31 13 A.   OKAY.

03:55:33 14 Q.   IS THAT THE OSPF STANDARD OR AT LEAST ONE OF THE RFC'S FOR

03:55:39 15 OSPF THAT YOU LOOKED AT FOR THIS ANALYSIS?

03:55:42 16 A.   IT'S ONE OF THEM, YES.

03:55:44 17   MR. FERRALL: YOUR HONOR, I WOULD LIKE TO MOVE

03:55:46 18 EXHIBIT 6817 INTO EVIDENCE.

03:55:47 19   MR. NELSON: BASED ON THAT DESCRIPTION, I'M FINE

03:55:49 20 YOUR HONOR. I'M HAVING TROUBLE KEEPING UP, BUT I'M OKAY WITH

03:55:53 21 IT.

03:55:53 22   THE COURT: IT WILL BE ADMITTED.

03:55:55 23 (DEFENDANT'S EXHIBIT 6817 WAS ADMITTED INTO EVIDENCE.)

03:55:55 24 BY MR. FERRALL:

03:56:01 25 Q.   OKAY. AND WE ARE NOT GOING TO BE ABLE TO GO THROUGH THIS,

03:56:04 1   MUCH TO THE JURY'S PLEASURE TO HEAR THAT WE ARE NOT GOING TO GO

03:56:08 2   THROUGH THIS FOR EVERY COMMAND, BUT SUFFICE IT TO SAY, DID YOU

03:56:12 3   PERFORM IN SIMILAR ANALYSIS FOR THE OSPF STANDARD AND OTHERS?

03:56:18 4   A.   I DID.

03:56:18 5   Q.   AND DID YOU PREPARE A SUMMARY OF THE NUMBER OF COMMANDS

03:56:21 6   THAT, THE NUMBER OF COMMAND TERMS THAT ARE ASSERTED IN THIS

03:56:26 7   CASE THAT CAME FROM ITEF PUBLICATIONS LIKE RFC'S?

03:56:31 8   A.   YES.

03:56:32 9   Q.   ALL RIGHT. AND IF WE COULD LOOK AT SLIDE 15.

03:56:40 10   A.   SO THIS IS THE ITEF VERSION, THESE ARE A SAMPLING OF THE

03:56:45 11   VARIOUS COMMAND TERMS. IN FACT, EVERY ONE OF THESE IS A

03:56:49 12   PROTOCOL.

03:56:49 13   AND SO THERE ARE, I DON'T KNOW, ABOUT 20 OR SO OF THOSE ON

03:56:52 14   THE SLIDE.

03:56:57 15   Q.   SO ARE THESE TERMS USED IN ASSERTED COMMANDS?

03:56:59 16   A.   I THINK, YEAH, EVERY ONE OF THEM IS.

03:57:01 17   Q.   SOMETIMES MULTIPLE TIMES?

03:57:03 18   A.   NOT WITHIN THE SAME COMMAND, BUT YEAH, IT MIGHT BE

03:57:06 19   MULTIPLE COMMANDS THAT USE A GIVEN TERM.

03:57:08 20   Q.   ALL RIGHT.

03:57:09 21   AND HOW ABOUT IEEE STANDARDS, DID YOU PREPARE A SUMMARY OF

03:57:13 22   WHAT YOU FOUND FROM IEEE STANDARDS?

03:57:15 23   A.   YES. I THINK IT'S THE NEXT SLIDE.

03:57:18 24   SO HERE, THESE AREN'T ALL PROTOCOLS, SOME OF THESE ARE

03:57:22 25   TERMS FROM WITHIN THE PROTOCOL DOCUMENT. BUT ALL OF THESE ARE

03:57:25 1   PART OF A STANDARD THAT WAS PUBLISHED BY THE IEEE WHICH

03:57:28 2   OPERATES OUTSIDE OF ANY COMPANY.

03:57:31 3   Q.   NOW AFTER YOU COMPLETED ALL OF THE -- THIS REVIEW, DID YOU

03:57:38 4   ATTEMPT TO PUT TOGETHER ALL OF YOUR FINDINGS INTO ONE PLACE?

03:57:42 5   A.   I DID AND IT WAS A LOT OF FUN.

03:57:46 6   Q.   OKAY. IF YOU COULD LOOK AT EXHIBIT 9042, PLEASE.

03:58:07 7   A.   WHERE WOULD I FIND IT?

03:58:09 8   THE COURT: IT'S THE LAST BINDER, NUMBER 8, IT'S THE

03:58:11 9   SKINNY ONE.

03:58:14 10   THE WITNESS: THANK YOU, YOUR HONOR.

03:58:19 11   OKAY. I'M WITH YOU.

03:58:22 12   Q.   WHAT'S 9042?

03:58:25 13   A.   THIS IS AN EXCEL SPREADSHEET WHERE I LISTED ALL 506 OF THE

03:58:32 14   ASSERTED MULTIWORD COMMANDS. AND IN EACH CASE, I COLORED IN A

03:58:36 15   CELL, EACH OF THE TERMS IS COLORED, ONE OF THOSE THREE COLORS

03:58:41 16   UP ON THE PAPER OVER THERE, IT'S EITHER A BROWN, IF IT'S FROM A

03:58:45 17   LEGACY CLI, BLUE, IF I CONSIDER IT TO BE A COMMON NETWORKING

03:58:50 18   TERM, AND GREEN, IF IT COMES FROM ONE OF THOSE TWO STANDARDS

03:58:55 19   BADDIES WE JUST TALKED ABOUT.

03:59:01 20   Q.   AND DID DOUBLE CHECK THIS TO CONFIRM THE TERMS WERE FOUND

03:59:07 21   IN RFC'S, IF THAT'S WHAT YOU INDICATE ON HERE?

03:59:11 22   A.   MANY TIMES.

03:59:12 23   MR. FERRALL: YOUR HONOR, AT THIS POINT I WOULD LIKE

03:59:13 24   TO DISPLAY THIS TO THE JURY.

03:59:16 25   THE COURT: ARE YOU GOING TO MOVE IT INTO EVIDENCE?

03:59:18 1   MR. FERRALL: ULTIMATELY, I WOULD LIKE TO, BUT IF I

03:59:20 2   CAN AT LEAST USE IT AS A DEMONSTRATIVE AT THIS POINT.

03:59:23 3   THE COURT: ANY OBJECTION TO IT BEING A DEMONSTRATIVE

03:59:25 4   AT THIS POINT?

03:59:25 5   MR. NELSON: NO, YOUR HONOR.

03:59:26 6   THE COURT: OKAY.

03:59:26 7   MR. NELSON: THAT'S OKAY.

03:59:29 8   BY MR. FERRALL:

03:59:31 9   Q. SO DR. BLACK, I KNOW YOU EXPLAINED THIS BEFORE IT WAS UP

03:59:35 10   ON THE SCREEN, BUT CAN YOU EXPLAIN TO THE JURY AGAIN WHAT IS

03:59:41 11   SHOWN HERE.

03:59:42 12   A.   SURE. SO THIS IS AN ALPHABETICAL LISTING, IT'S 506 LINES

03:59:47 13   LONG BECAUSE EVERY COMMAND THAT'S ASSERTED BY CISCO IS LISTED

03:59:50 14   HERE.

03:59:50 15   AND THEN IN EACH CASE, LINE BY LINE, IF A GIVEN COMMAND

03:59:54 16   TERM LIKE AAA, THAT'S THE FIRST ONE HERE, IF THAT'S FOUND IN AN

04:00:00 17   ITEF OR IEEE DOCUMENT, I COLORED IT GREEN.

04:00:03 18   SO THERE IS AN AAA STANDARD IN THE ITEF. AND SO I COLORED

04:00:08 19   IT GREEN. AND THERE'S ONE REGARDING ACCOUNTING, I COLORED THAT

04:00:12 20   GREEN AS WELL.

04:00:13 21   THERE'S SOME THAT ARE BLUE BECAUSE I DIDN'T CONSIDER THEM

04:00:16 22   TO BE -- I DIDN'T FIND THEM IN ANY STANDARDS DOCUMENT, BUT I

04:00:22 23   CONSIDER THEM TO BE COMMON ENOUGH TERMS THAT EVERYBODY WOULD

04:00:24 24   KNOW THEM AND UNDERSTAND THEM.

04:00:25 25   THERE ARE SOME BROWN ONES THAT ARE FURTHER DOWN. THOSE

04:00:30 1   ARE TAKEN FROM THAT FIRST LIST THAT CORRESPOND TO THAT BROWN

04:00:34 2   CIRCLE UP ON THE TOP, THE POSTER BOARD OVER THERE.

04:00:37 3   AND THEN IF I DIDN'T FIND THEM ANYWHERE AND DIDN'T

04:00:40 4   CONSIDER THEM TO BE COMMON TERMS, I LEFT THEM AS WHITE.

04:00:43 5   Q.   OKAY. SO WE SEE HERE NOW, HERE'S A PAGE WITH MORE BROWN

04:00:49 6   AND BLUE.

04:00:54 7   THIS HAS, FOR EXAMPLE, THE "SHOW COMMANDS" YOU FOUND FROM

04:00:57 8   LEGACY OPERATING SYSTEM; IS THAT RIGHT?

04:00:59 9   A.   TO BE CLEAR, I FOUND THE WORD "SHOW" USED AS A COMMAND IN

04:01:05 10 THOSE OPERATING SYSTEM, NOT NECESSARILY THE ENTIRE COMMAND

04:01:08 11 SHOWN HERE.

04:01:08 12 Q.   FAIR ENOUGH. THANK YOU.

04:01:10 13   AND YOU ARE NOT -- YOU HAVE A NUMBER OF TERMS HERE IN

04:01:13 14 WHITE, AND THOSE REFLECT THE FACT THAT THESE WERE NOT PRESENT

04:01:19 15 FROM YOUR INVESTIGATION IN LEGACY OPERATING SYSTEMS OR RFC; IS

04:01:30 16 THAT RIGHT?

04:01:30 17 A.   RIGHT. YOU CAN SEE ALL STATISTICS, COOLING, POWER,

04:01:36 18 TEMPERATURE. I MEAN, YOU CAN ARGUE IT'S A JUDGMENT CALL TO

04:01:41 19 DETERMINE WHETHER THAT'S A TERM THAT EVERYBODY KNOWS OR NOT.

04:01:43 20 IF I DID, I MADE IT BLUE. IF NOT, I LEFT IT WHITE.

04:01:48 21   IT WAS A JUDGMENT CALL. I TRIED TO MAKE IT REASONABLE AND

04:01:50 22 CONSERVATIVE WHEN I MADE THIS CHART.

04:01:53 23 Q.   YOU ARE NOT CLAIMING THAT EVERY WORD FROM CISCO IS FROM AN

04:01:56 24 RFC OR A PRIOR OPERATING SYSTEM?

04:01:57 25 A.   NO, THERE ARE PLENTY OF WHITE CELLS IN MY CHART HERE.

04:02:01   1   Q.   NOW, WERE YOU ASKED TO PROVIDE AN OPINION ON A DOCTRINE

04:02:08   2   KNOWN AS SCÈNES À FAIRE?

04:02:09   3   A.   YES, I WAS.

04:02:10   4   Q.   OKAY.   IF WE COULD JUST PUT THAT SLIDE 22 UP, MR. DAHM.

04:02:16   5   AND YOU UNDERSTAND THIS IS A LEGAL DOCTRINE; RIGHT.

04:02:20   6   A.   THAT'S WHAT MY UNDERSTANDING IS.

04:02:22   7   Q.   AND THAT'S NOT YOUR SPECIALTY?

04:02:23   8   A.   IT IS DEFINITELY NOT.

04:02:25   9   Q.   BUT YOU UNDERSTAND THAT THIS DOCTRINE SAYS THAT MATERIAL

04:02:31   10   THAT FLOWS NATURALLY FROM CONSIDERATIONS OR FACTORS THAT ARE

04:02:38   11   EXTERNAL TO AN AUTHOR'S CREATIVITY SHOULD NOT BE PROTECTED BY

04:02:42   12   COPYRIGHT.

04:02:43   13   WAS THAT WHAT YOU FOLLOWED IN ASSESSING THIS?

04:02:46   14   A.   THAT WAS MY UNDERSTANDING, YES.

04:02:47   15   Q.   AND CAN YOU EXPLAIN TO THE JURY WHAT, IF ANY, EXTERNAL

04:02:53   16   CONSTRAINTS OR CONSIDERATIONS YOU FOUND TO BE PRESENT FOR THE

04:03:00   17   CISCO ENGINEERS AS THEY WERE DERIVING THESE CLI COMMANDS?

04:03:04   18   A.   RIGHT.

04:03:05   19   SO I MEAN, IF YOU IMAGINE YOU ARE GOING TO GO OUT AND

04:03:08   20   CREATE A NEW CLI COMMAND, I MEAN, PROBABLY THE FIRST THING YOU

04:03:12   21   ARE GOING TO DO IS THINK, WELL, WHAT DOES IT DO, WHAT'S THE

04:03:16   22   FEATURE THAT I'M TRYING TO DESCRIBE.

04:03:19   23   AND SO IF YOU WANTED TO DO SOMETHING LIKE CLEAR

04:03:23   24   SPANNING-TREE COUNTERS, YOU MIGHT MAKE A NEW CLI COMMAND CALLED

04:03:27   25   CLEAR SPANNING TREE COUNTERS, THAT WOULD MAKE SENSE.

04:03:31 1   YOU PROBABLY WOULDN'T USE "SHOW IP INTERFACE" OR SOMETHING

04:03:39 2   THAT DOESN'T AT ALL DESCRIBE THE THING YOU ARE GOING TO DO. SO

04:03:41 3   I THINK THAT'S A CONSTRAINT. TRYING TO BE DESCRIPTIVE, TRYING

04:03:44 4   TO BE CLEAR, CONCISE. USE ABBREVIATIONS, WHEN IT MAKES SENSE,

04:03:47 5   IF THEY ARE WELL UNDERSTOOD.

04:03:49 6   WE ARE LAZY PEOPLE, NETWORK ENGINEERS, WE DON'T WANT TO

04:03:52 7   TYPE MORE THAN WE HAVE TO. SO IF WE CAN ABBREVIATE OR USE

04:03:55 8   SMALLER TERMS, THAT'S ATTRACTIVE, WE WANT TO DO THAT AS WELL.

04:03:59 9   AND ALSO, IF YOU NOT ADDING THE FIRST CLI COMMAND, THEN

04:04:03 10   YOU PROBABLY WANT TO MAKE IT FIT IN WITH THE COMMANDS YOU

04:04:07 11   ALREADY HAVE.

04:04:07 12   AND MR. REMAKER LAST WEEK TALKED A LITTLE BIT ABOUT THE

04:04:11 13   HIGHLY TECHNICAL ASPECTS OF CISCO'S PARSER THAT MIGHT CONSTRAIN

04:04:15 14   CHOICES ALONG THOSE LINES AS WELL.

04:04:20 15   Q.   DID YOU FIND IN THE EVIDENCE, ANY DOCUMENTS OR OTHER

04:04:25 16   TESTIMONY THAT SUGGESTED TO YOU THAT THE CISCO ENGINEERS

04:04:31 17   ACTUALLY FOLLOWED SOME OF THESE CONSTRAINTS AND WERE BOUND BY

04:04:35 18   SOME OF THESE CONSTRAINTS IN COMING UP WITH THE CLI COMMANDS?

04:04:38 19   A.   SURE. I MEAN, I REFERENCED MS. LIU'S USE, TAKING WORDS

04:04:44 20   DIRECTLY OUT OF THE STANDARDS, THOSE WOULD BE FAMILIAR TO

04:04:48 21   ENGINEERS.

04:04:48 22   MR. REMAKER, ONCE AGAIN, CITED SOME OF THOSE CONSTRAINTS

04:04:51 23   AND HE TALKED I THINK AT LENGTH ABOUT THIS DOCUMENT THEY HAVE

04:04:54 24   CALLED THE PARSER-POLICE MANIFESTO THAT ENSHRINES MANY OF THE

04:04:59 25   SAME SORTS OF CONCERNS AND CONSTRAINTS THAT I JUST DESCRIBED.

04:05:02   1   Q.   OKAY. IF WE COULD LOOK AT EXHIBIT 5175 WHICH IS ALREADY

04:05:08   2   ADMITTED.

04:05:18   3   DR. BLACK, YOU UNDERSTAND THIS WAS A VERSION OF THE

04:05:22   4   PARSER-POLICE MANIFESTO THAT'S IN EVIDENCE ALREADY?

04:05:26   5   A.   YES, I UNDERSTAND THAT.

04:05:27   6   Q.   AND CAN YOU EXPLAIN TO THE JURY HOW THIS PARSER-POLICE

04:05:33   7   MANIFESTO APPLIES TO YOUR SCÈNES À FAIRE OPINION?

04:05:39   8   A.   I MEAN THIS THING IS -- HAS, AMONG OTHER THINGS, ADVICE ON

04:05:44   9   HOW TO MAKE A GOOD CLI COMMAND THAT FITS IN WITH WHAT EXISTS

04:05:49 10   ALREADY AND MAKES SENSE TO THE USERS AND FOLLOWS THOSE

04:05:52 11   CONSTRAINTS THAT I JUST MENTIONED A MOMENT AGO.

04:05:54 12   Q.   OKAY. IF WE COULD GO TO THE GUIDELINES --

04:06:00 13   AND MR. DAHM, I THINK IT'S ON THE SECOND PAGE OR THIRD

04:06:03 14   PAGE, MAYBE.

04:06:14 15   SO I GUESS, DR. BLACK, THIS LOOKS LIKE PART OF THE

04:06:17 16   GUIDELINES SECTION. IS THERE ONE IN PARTICULAR -- IF YOU COULD

04:06:25 17   LOOK IN YOUR BINDER.

04:06:27 18   A.   I'M SORRY, WHAT WAS THE EXHIBIT NUMBER?

04:06:29 19   Q.   AH. SORRY. 5175.

04:06:45 20   A.   OKAY. I HAVE IT.

04:06:51 21   Q.   SO THE QUESTION, DR. BLACK, IS WERE THERE PARTICULAR

04:06:57 22   GUIDELINES OR ASPECTS OF THE PARSER-POLICE MANIFESTO THAT YOU

04:07:00 23   FOUND RELEVANT TO THE SCÈNES À FAIRE OPINION?

04:07:03 24   A.   WELL, I THINK IN SOME SENSE THEY ALL ARE, INSOFAR AS THEY

04:07:07 25   ARE THE GIVING ADVICE ON WHAT TO DO AND WHAT NOT TO DO.

04:07:11 1   WE COULD TAKE, FOR EXAMPLE, PERHAPS BULLET SIX, WHICH IS I

04:07:23 2   THINK IS -- IT'S A LITTLE BIT FADED ON MY COPY. YEAH, THIS I

04:07:27 3   THINK IS A GOOD EXAMPLE.

04:07:28 4   Q.   SO CAN YOU EXPLAIN WHAT YOU UNDERSTOOD THIS TO MEAN?

04:07:32 5   A.   CAN I READ THE FIRST SENTENCE INTO THE RECORD?

04:07:34 6   Q.   SURE.

04:07:35 7   A.   SO IT SAYS, WHEN NAMING A COMMAND, TRY TO PICK NAMES THAT

04:07:38 8   WOULD BE FAMILIAR TO PEOPLE IN THE INDUSTRY. AND THEN THEY GO

04:07:42 9   TO GIVE SOME EXAMPLES.

04:07:44 10   WELL, I THINK I WAS TRYING TO CAPTURE THAT SAME ADVICE A

04:07:47 11   MOMENT AGO. IF YOU ARE GOING TO USE MTU, ALTHOUGH PEOPLE WHO

04:07:51 12   DON'T WORK IN NETWORKS, THAT MIGHT LOOK COMPLETELY MEANINGLESS,

04:07:57 13   TO SOMEONE THAT WORKS IN NETWORKING THAT MEANS MAXIMUM

04:08:00 14   TRANSMISSION UNIT, AND IT WOULD BE FAMILIAR.

04:08:02 15   AND I THINK IT MAKES A LOT OF SENSE BOTH FOR BREVITY AND

04:08:04 16   CLARITY AND FAMILIARITY TO USE A TERM LIKE THAT.

04:08:06 17   Q.   OKAY.

04:08:07 18   AND BASED UPON YOUR REVIEW OF ALL OF THE EVIDENCE IN THIS

04:08:14 19   CASE, WHAT CONCLUSION, IF ANY, DID YOU REACH CONCERNING THE

04:08:18 20   APPLICABILITY OF THE SCÈNES À FAIRE DOCTRINE TO THE ASSERTED

04:08:25 21   CLI ELEMENTS?

04:08:25 22   A.   I THINK GIVEN THE LARGE NUMBER OF CONSTRAINTS TO DESCRIBE

04:08:28 23   THE FEATURE YOU ARE IMPLEMENTING AND TO FOLLOW ALL OF THOSE

04:08:31 24   OTHER GUIDELINES THAT WERE SET FORTH IN THIS DOCUMENT AND

04:08:34 25   ACCORDING TO THE TESTIMONY WE'VE HEARD, THAT REALLY, THE

04:08:37 1   COMMAND THAT YOU END UP WITH FLOWS PRIMARILY FROM SOURCES AND

04:08:42 2   SUBJECT TO CONSTRAINTS OUTSIDE OF THE AUTHOR'S CREATIVITY.

04:08:49 3   Q.   ALL RIGHT.

04:08:50 4   NOW DR. BLACK, I WOULD LIKE TO TURN TO WHAT I THINK YOU

04:08:53 5   IDENTIFIED IN THE BEGINNING AS THE SECOND CATEGORY OF YOUR

04:08:57 6   ANALYSIS, AND THAT WAS FAIR USE; RIGHT?

04:09:00 7   A.   YES, SIR.

04:09:01 8   Q.   ARE YOU READY FOR THAT?

04:09:03 9   A.   I WILL DO MY BEST.

04:09:04 10   Q.   AND IF WE COULD JUST CALL UP SLIDE 25, PLEASE. YOU REFER

04:09:13 11   TO FOUR FAIR USE FACTORS IN THE BEGINNING.

04:09:16 12   DO YOU RECOGNIZE THESE AS THE FACTORS YOU WERE ASKED TO

04:09:20 13   CONSIDER?

04:09:20 14   A.   I THINK THEY ARE SHORTENED VERSIONS, BUT YES.

04:09:24 15   Q.   AND IF WE COULD JUST TICK THROUGH AGAIN, WE WILL GO INTO

04:09:27 16   SOME DETAIL, BUT AT A SUMMARY LEVEL, WHAT DID YOU FIND ON EACH

04:09:31 17   OF THESE FACTORS?

04:09:33 18   A.   YOU ARE ASKING FOR MY FINDINGS?

04:09:35 19   Q.   YES, YOUR FINDINGS AS TO EACH OF THEM.

04:09:38 20   A.   SO THE FIRST ONE, PURPOSE AND CHARACTER OF THE USE.

04:09:42 21   THAT ASKS: IS ARISTA, IN THIS CONTEXT, IS ARISTA

04:09:47 22   TRANSFORMATIVE? AND I FOUND IT WAS, IN FACT, HIGHLY

04:09:50 23   TRANSFORMATIVE, AS I MENTIONED EARLIER.

04:09:52 24   NATURE OF THE WORK. HERE THE WORK MEANS THE CISCO CLI.

04:09:55 25   CISCO USER INTERFACE. WHAT IS THE NATURE OF IT? AND AS I SAID

04:18:40   1   A.   THIS IS ENTITLED -- THIS IS A WHITE PAPER ENTITLED "ARISTA

04:18:44   2   CLOUD NETWORKS."

04:18:46   3   Q.   AND CAN YOU EXPLAIN WHY YOU LOOKED AT THAT FOR PURPOSES OF

04:18:51   4   ANALYZING THE FAIR USE FACTORS?

04:18:54   5   A.   SURE.

04:18:54   6   SO I WAS TRYING TO DETERMINE WHETHER ARISTA'S PRODUCTS

04:18:57   7   WERE TRANSFORMATIVE. AND WITH RESPECT TO THEIR INTEREST IN

04:19:03   8   CLOUD COMPUTING AND THOSE CUSTOMERS, THEY WANTED TO PROVIDE

04:19:07   9   TOOLS AND FEATURES THAT PROVIDED MANAGEABILITY. BECAUSE WHEN

04:19:13 10   YOU HAVE 10,000 SWITCHES, YOU CAN'T HAVE A GUY GO AROUND AND

04:19:20 11   TYPE IN CLI COMMANDS, YOU NEED TO BE ABLE TO HAVE MANAGEMENT

04:19:22 12   TOOLS MONITORING SO THAT YOU CAN KEEP AN EYE ON WHAT'S GOING ON

04:19:25 13   IN THAT DATA CENTER WITH THOSE 10,000 SWITCHES.

04:19:29 14   AND SCALEABILITY, BECAUSE YOU WANT TO BE ABLE TO GROW YOUR

04:19:32 15   NETWORK WITHOUT REACHING AN ARTIFICIAL LIMIT OR CEILING ON THE

04:19:36 16   GROWTH.

04:19:37 17   MR. FERRALL: YOUR HONOR, I WOULD OFFER EXHIBIT 7408

04:19:40 18   INTO EVIDENCE.

04:19:40 19   MR. NELSON: NO OBJECTION.

04:19:42 20   THE COURT: IT WILL BE ADMITTED.

04:19:44 21   (DEFENDANT'S EXHIBIT 7408 WAS ADMITTED INTO EVIDENCE.)

04:19:44 22   Q.   AND COULD YOU HELP MR. DAHM FIND THE PAGES HERE THAT ARE

04:19:52 23   TALKING ABOUT THE FEATURES YOU ARE REFERRING TO?

04:19:54 24   A.   I WILL DO MY BEST.

04:19:56 25   SO BATES ENDING IN 5213. THERE'S A PARAGRAPH AT THE

04:20:03 1   BOTTOM IT'S CALLED ZERO TOUCH PROVISIONING.

04:20:08 2   THIS IS A FEATURE THAT ARISTA CREATED THAT ALLOWS YOU TO

04:20:11 3   TAKE A BRAND-NEW ARISTA PRODUCT, SHOVE IT INTO A RACK IN YOUR

04:20:15 4   DATA SHEET AND THAT'S IT. AND IT WILL AUTOMATICALLY COME UP,

04:20:18 5   IT WILL SEARCH THE NETWORK LOOKING FOR AN OPERATING SYSTEM

04:20:22 6   IMAGE AND A CONFIGURATION FILE, DOWNLOAD THAT AND RUN IT FOR

04:20:26 7   YOU.

04:20:27 8   AND THIS MEANS YOU DON'T HAVE TO GO AROUND AND SET UP EACH

04:20:31 9   SWITCH ONE AT A TIME, YOU CAN DO IT AUTOMATICALLY.

04:20:33 10   AND THEY CALLED IT ZERO TOUCH BECAUSE YOU DON'T HAVE TO

04:20:36 11   TOUCH THE THING.

04:20:39 12   Q.   IF YOU COULD GIVE ONE EXAMPLE OF, I THINK YOU TALKED ABOUT

04:20:43 13   MONITORING?

04:20:44 14   A.   OKAY. SO MONITORING, VM TRACER IS A GOOD EXAMPLE OF THIS.

04:20:49 15   THESE DAYS COMPUTERS RARELY ARE COMPUTERS YOU CAN TOUCH,

04:20:51 16   AT LEAST IN THE DATA CENTER, THEY ARE THESE VIRTUAL MACHINES,

04:20:55 17   THESE PRETEND COMPUTERS.

04:20:56 18   AND THOSE MOVE AROUND. AND BEING ABLE TO FOLLOW THEM AS

04:20:59 19   THEY MOVE AROUND CAN BE A CHORE. AND SO ARISTA CREATED THE VM

04:21:04 20   TRACER TO HELP TRACK THE MOVEMENT OF THESE VIRTUAL COMPUTERS

04:21:07 21   AROUND THE DATA CENTER.

04:21:08 22   Q.   AND I THINK YOU ALSO MENTIONED IN THIS CATEGORY OF

04:21:11 23   AUTOMATION, SCALEABILITY?

04:21:14 24   A.   RIGHT.

04:21:15 25   SO THE NEXT ONE, VX LAN, GOES THAT. AND I HAVE TO GET

04:23:16 1   Q.   OKAY. DO YOU REMEMBER WHAT THIS RELATES TO REGARDING ZTP?

04:23:23 2   A.   I BELIEVE IT'S A SERIES OF E-MAILS FROM FOLKS AT CISCO

04:23:28 3   TALKING ABOUT THE ZTP FEATURE.

04:23:31 4   Q.   OKAY.

04:23:33 5   MR. FERRALL: YOUR HONOR, I MOVE EXHIBIT 6743 IN

04:23:38 6   EVIDENCE.

04:23:38 7   MR. NELSON: NO OBJECTION, YOUR HONOR.

04:23:39 8   THE COURT: IT WILL BE ADMITTED.

04:23:41 9   (DEFENDANT'S EXHIBIT 6743 WAS ADMITTED INTO EVIDENCE.)

04:23:41 10 BY MR. FERRALL:

04:23:53 11 Q.   AND DO YOU RECALL WHAT THE CISCO FOLKS WERE SAYING ABOUT

04:23:55 12 THE ARISTA ZTP FEATURE?

04:23:58 13 A.   YEAH, I THINK IT'S STATED HERE IN THE BULLETS THAT JUST

04:24:03 14 SHOWED UP ON MY SCREEN. SHALL I READ IT?

04:24:07 15 Q.   SURE. THE FIRST BULLET.

04:24:08 16 A.   THE FIRST BULLET SAYS, "I THINK IT WOULD BE BEST TO ADD

04:24:11 17 CONTEXT TO THE CHANGES WE'RE DOING TO MIMIC WHAT ARISTA ALREADY

04:24:14 18 OFFERS TODAY WITH THEIR ZTP."

04:24:18 19 Q.   AND THIS IS AS OF JUNE 2014?

04:24:21 20 A.   YES.

04:24:21 21 Q.   OKAY. HAVE WE FAIRLY COVERED THE SORT OF EVIDENCE YOU

04:24:31 22 CONSIDERED FOR THE FIRST FAIR USE FACTOR?

04:24:33 23 A.   I THINK I CONSIDERED ACTUALLY MORE THAN THIS, BUT THIS

04:24:36 24 COVERS MOST OF IT, YES.

04:24:37 25 Q.   OKAY. LET'S GO TO THE SECOND FACTOR WHICH IS THE NATURE

04:26:14   1   TELLING YOU A FACT ABOUT THE CORRESPONDING ELEMENT.

04:26:19   2   Q.   AND ONE MORE QUESTION ON THIS TOPIC. THERE'S BEEN SOME

04:26:25   3   DISCUSSION ABOUT THE WORKS AS A COMPILATION OF ELEMENTS.

04:26:32   4   HAVE YOU GIVEN ANY THOUGHT AS TO WHETHER THE COMPILATION

04:26:37   5   OF ELEMENTS AS OPPOSED TO INDIVIDUAL COMMANDS AND SO FORTH, IS

04:26:43   6   FUNCTIONAL OR FACTUAL IN NATURE?

04:26:47   7   A.   YEAH, I MEAN, I THINK THIS IS SORT OF A LEGAL ARGUMENT

04:26:50   8   THAT'S GOING ON TO SOME EXTENT, BUT FROM A TECHNICAL

04:26:54   9   STANDPOINT, I MEAN, WHEN YOU -- WHEN YOU ARE DESIGNING A

04:26:58 10   PRODUCT YOU DON'T GO, HEY, I HAVE THIS NIFTY CLI COMMAND, I

04:27:02 11   WONDER WHAT KIND OF FEATURE I CAN PUT IN THERE TO CORRESPOND.

04:27:05 12   IT'S THE OTHER WAY, RIGHT? YOU DECIDE WHAT FEATURES ARE

04:27:09 13   GOING INTO THE SWITCH THEN THAT DICTATES WHAT THE COMPUTATION

04:27:11 14   OF THE CLI COMMANDS IS.

04:27:17 15   Q.   ALL RIGHT. LET'S MOVE TO THE THIRD FACTOR WHICH IS THE

04:27:19 16   SUBSTANTIALITY OF THE USE.

04:27:22 17   DID YOU CONSIDER IN FAIR USE FACTOR ALSO?

04:27:25 18   A.   FOR MANY MONTHS, YES.

04:27:27 19   Q.   AND YOU UNDERSTAND THIS IS EXPOSE E SUPPOSED TO LOOK AT

04:27:36 20   THE WORK AS A WHOLE AS COMPARED TO THE PART OF THE WORK THAT

04:27:38 21   WAS USED OR IS ASSERTED AGAINST ARISTA; RIGHT?

04:27:41 22   A.   THAT'S MY UNDERSTANDING, YES.

04:27:43 23   Q.   OKAY. AND DID YOU HAVE ANY BASIS TO KNOW WHAT THE

04:27:49 24   BOUNDARIES WAS OF THE WORK AS A WHOLE?

04:27:52 25   A.   I MEAN, MY UNDERSTANDING IS THAT WHAT'S BEING ASSERTED IS

04:29:28 1   VOLUME OF USER MANUALS FROM A VARIETY OF OTHER COMPANIES, I

04:29:31 2   THINK 18 OTHER SWITCH VENDORS AND ROUTER VENDORS IN THE

04:29:37 3   INDUSTRY.

04:29:37 4   THEN FOR EACH OF THESE 506 COMMANDS, LIKE AAA ACCOUNTING,

04:29:44 5   I WOULD GO THROUGH THE MANUALS AND SEE, DOES THIS VENDOR HAVE

04:29:47 6   THE PRODUCT THAT OFFERS AAA ACCOUNTING? AND IF IT DID, I WROTE

04:29:49 7   IT DOWN. AND IF IT DIDN'T, I DIDN'T.

04:29:51 8   Q.   DR. BLACK, LET ME BACK UP A SECOND.

04:29:54 9   WHAT I'M ASKING -- WE HAVEN'T GOTTEN TO THAT FACTOR YET.

04:29:58 10   A.   I'M SO SORRY.

04:29:59 11   Q.   NO, THAT'S ALL RIGHT. WE ARE ON THE SUBSTANTIALITY OF

04:30:01 12   ARISTA'S USE OF CISCO'S USER INTERFACE.

04:30:05 13   SO IN TERMS OF DETERMINING HOW MUCH THE ASSERTED COMMANDS,

04:30:11 14   YOU ARE WITH ME; RIGHT?

04:30:12 15   A.   I JUMPED AHEAD SOMEHOW, I MISUNDERSTOOD WHAT YOU WERE

04:30:15 16   ASKING. MY APOLOGIES.

04:30:17 17   Q.   SO IN TERMS OF DETERMINING HOW MUCH ARISTA USED OF FOR

04:30:21 18   EXAMPLE THE CLI COMMANDS IN COMPARISON TO THE COMMANDS OF THE

04:30:25 19   USER INTERFACE AS A WHOLE, WHAT DID YOU DO?

04:30:27 20   A.   OKAY. BACKING UP.

04:30:31 21   SO THERE ARE 506 COMMANDS ASSERTED. AND I WANTED TO KNOW,

04:30:35 22   WELL, HOW MANY COMMANDS DID THE CISCO PRODUCTS HAVE. THE ONLY

04:30:40 23   NUMBER I COULD FIND THAT CISCO PUBLISHED WAS 16,000 IN IOS.

04:30:45 24   AND YOU REMEMBER THERE ARE FOUR OPERATING SYSTEMS HERE. SO IOS

04:30:49 25   IS JUST ONE OF THOSE.

04:30:50 1   AND IN THAT CASE, 441 OF THE 506 ARE IOS COMMANDS. AND SO

04:30:55 2   I USED CISCO'S NUMERATOR OVER CISCO'S DENOMINATOR, 441 OUT OF

04:31:01 3   16,000, AND IT COMES OUT TO, I DON'T KNOW, 2.7 PERCENT OR

04:31:06 4   SOMETHING LIKE THAT.

04:31:07 5   Q.   OKAY. IF WE COULD LOOK AT 7343 IN YOUR BINDER, PLEASE.

04:31:26 6   A.   OKAY.

04:31:27 7   Q.   CAN YOU TELL US WHAT THAT IS?

04:31:29 8   A.   IT'S A HUGE BROCADE 6910 ETHERNET ACCESS SWITCH

04:31:34 9   CONFIGURATION GUIDE.

04:31:35 10   Q.   7343?

04:31:37 11   A.   DO I HAVE THE WRONG ONE?

04:31:41 12   Q.   MAYBE I HAVE THE WRONG EXHIBIT NUMBER. WE WILL COME BACK

04:31:47 13   TO THAT.

04:31:52 14   LET'S LOOK AT SLIDE 27, PLEASE. CAN YOU EXPLAIN WHAT

04:32:01 15   SLIDE 27 SHOWS?

04:32:05 16   A.   RIGHT. SO AGAIN, THIS IS THE THIRD FACTOR FOR FAIR USE,

04:32:09 17   LOOKING AT THE AMOUNT THAT ARISTA USED OUT OF THE TOTAL AMOUNT

04:32:13 18   OF NUMBER OF COMMANDS OUT OF IOS.

04:32:15 19   AND ONCE AGAIN, I USED 441 AS THE NUMBER OF IOS COMMANDS

04:32:18 20   IN THE ACCUSED 506. AND PUT IT OVER 16,000, WHICH WAS CISCO'S

04:32:23 21   NUMBER OF TOTAL IOS COMMANDS. AND THIS IS A DEPICTION OF THE

04:32:29 22   SLIVER OF THE ASSERTED COMES OUT OF THE WHOLE.

04:32:32 23   Q.   NOW DID YOU HAVE ANY WAY TO MEASURE WHETHER 2.7 PERCENT IS

04:32:41 24   A SUBSTANTIAL AMOUNT OR NOT? DO YOU HAVE ANY MEASURING STICK

04:32:47 25   AGAINST WHICH TO PRODUCE THAT?

04:32:49 1   A.   I'M SORRY. THE LAW, AS IT'S BEEN EXPLAINED TO ME, DOESN'T

04:32:53 2   GIVE YOU A NUMBER TO LOOK FOR. IT'S JUST -- YOU JUST LOOK AT

04:32:56 3   THIS AS ONE OF THE FACTORS.

04:33:01 4   ██

04:33:04 5   ██

04:33:08 6   ██

04:33:13 7   ████████████████████

04:33:14 8   Q.   OKAY. IF WE COULD LOOK AT EXHIBIT 4672 THAT'S ALREADY IN

04:33:18 9   EVIDENCE.

04:33:22 10   AND I THINK IF WE COULD GO TO PAGE 11, MR. DAHM. AND BLOW

04:33:30 11   UP THE TOP PARAGRAPH, PLEASE.

04:33:37 12   SO IS THIS A LITTLE ROMAN NUMERAL FOUR, IS THAT WHAT YOU

04:33:41 13   ARE REFERRING TO, DR. BLACK?

04:33:44 14   A.   THAT'S WHAT I WAS REFERRING TO, YES.

04:33:46 15   Q.   AND COULD YOU JUST READ THAT IN?

04:33:48 16   █   ██

04:33:52 17   ██

04:33:56 18   ███████████████████████

04:34:00 19   Q.   AND YOU UNDERSTAND THIS IS A DOCUMENT THAT CISCO AGREED

04:34:03 20   TO?

04:34:03 21   A.   THAT'S MY UNDERSTANDING.

04:34:05 22   Q.   WERE YOU ABLE TO ASSESS THE SUBSTANTIALITY WITH REGARD TO

04:34:17 23   HELP STRINGS?

04:34:20 24   A.   YEAH. NOW WE ARE MOVING TO A DIFFERENT OPERATING SYSTEM.

04:34:23 25   THIS IS XR, AND MY UNDERSTANDING IS THAT CISCO IS ONLY

04:34:26 1   ASSERTING ITS HELP STRINGS FOR THAT ONE OPERATING SYSTEM. AND

04:34:34 2   I COMPARED THAT TO THE TOTAL NUMBER OF HELP STRINGS.

04:34:37 3   IN ORDER TO DO THAT, I HAD TO GO OVER TO CISCO'S

04:34:39 4   ATTORNEY'S LAW OFFICE WHERE THEY HAD A COMPUTER THAT HAD SOURCE

04:34:42 5   CODE FOR IOS XR, AND I WROTE A SHORT SCRIPT THAT COUNTED UP HOW

04:34:47 6   MANY TOTAL HELP STRINGS THERE ARE THERE, AND I PUT THAT

04:34:50 7   NUMERATOR OVER THE DENOMINATOR I COMPUTED.

04:34:55 8   Q.   WHAT DID YOU GET FOR THE TOTAL NUMBER OF HELP STRINGS?

04:34:58 9   A.   I THINK IT WAS -- I DIDN'T KNOW THERE WAS GOING TO BE A

04:35:01 10   TEST. I THINK IT WAS 221 OVER 52,290.

04:35:06 11   Q.   WELL THAT WAS MORE PRECISION THAN I COULD HAVE ASKED.

04:35:11 12   52,000 TOTAL HELP STRINGS?

04:35:12 13   A.   THEREABOUTS, YEAH.

04:35:13 14   Q.   ALL RIGHT. IF WE COULD LOOK AT SLIDE 28, PLEASE. WHAT

04:35:25 15   DOES THIS SHOW, DR. BLACK?

04:35:27 16   A.   IT SHOWS THE MATH THAT I WAS JUST TRYING TO REMEMBER.

04:35:30 17   IT'S THE 221 ACCUSED IOS XR HELP STRINGS OVER THE TOTAL THAT I

04:35:36 18   COUNTED WITH MY PROGRAM OF 52,000. AND IT'S ABOUT .4 PERCENT.

04:35:43 19   Q.   OKAY. I WANT TO ASK YOU ONE MORE QUESTION ABOUT THIS

04:35:47 20   THIRD FAIR USE FACTOR, SUBSTANTIALITY.

04:35:52 21   DID YOU LOOK AT THE DETAILS OF THE ARISTA COMMANDS TO SEE

04:35:56 22   WHAT SORT OF OTHER PARAMETERS OR FACTORS GO INTO THE ACTUAL

04:36:04 23   EXECUTION OF THE COMMANDS?

04:36:05 24   A.   YEAH. IN FACT, THAT'S AN IMPORTANT DETAIL.

04:36:08 25   SO WHEN CISCO ACCUSES THESE COMMANDS, A LOT OF THEM AREN'T

04:38:47 1   Q.   AND SO WHAT DID YOU LOOK AT OR WHAT WERE YOU ASKED TO LOOK

04:38:53 2   AT THAT YOU UNDERSTAND MAY BE RELEVANT TO MARKET HARM?

04:38:57 3   A.   THAT'S THE POINT AT WHICH I SPENT A LOT OF TIME GOING

04:39:01 4   THROUGH ALL THESE MANUALS FROM VARIOUS VENDORS.

04:39:06 5   Q.   AND I THINK YOU TALKED ABOUT LOOKING AT 18 OR 20 DIFFERENT

04:39:15 6   VENDORS' INFORMATION; IS THAT RIGHT?

04:39:17 7   A.   THAT'S RIGHT.

04:39:18 8   Q.   OKAY. DID YOU FEEL LIKE YOU WERE ABLE TO REVIEW AND

04:39:25 9   ACCESS ALL THE INFORMATION THAT EXISTS ABOUT THE CLI COMMANDS

04:39:31 10   THAT THESE VENDORS USED OVER TIME?

04:39:33 11   A.   NO. I MEAN, I LOOKED AT A LOT OF MANUALS, AND SOME OF

04:39:38 12   THESE MANUALS WERE THOUSANDS OF PAGES, BUT THERE ARE DEFINITELY

04:39:41 13   MORE MANUALS OUT THERE THEY COULDN'T GET A HOLD OF.

04:39:46 14   I THINK DR. LI YESTERDAY, THE GUY THAT STARTED PROCKET, HE

04:39:50 15   SAID WHEN CISCO ACQUIRED THEM, HE WAS ORDERED TO DESTROY THE

04:39:53 16   MANUALS. THE.

04:39:54 17   SO THERE DEFINITELY ARE MANUALS THAT JUST AREN'T AVAILABLE

04:39:59 18   ANYMORE THAT WOULD HAVE, PERHAPS, CHANGED MY ANALYSIS IN SOME

04:40:02 19   WAYS.

04:40:03 20   Q.   AND DID YOU HAVE PERSONAL EXPERIENCE WITH THIS SORT OF

04:40:05 21   COMMAND LANGUAGE OR DEVICES THAT SOME OF THESE VENDORS USED?

04:40:08 22   A.   ABSOLUTELY. I MEAN, THEY USE A CLI LANGUAGE. IT'S IN

04:40:13 23   THIS FUNKY FORMAT WE JUST SAW ON THE LAST EXHIBIT WITH THE

04:40:16 24   BRACKETS AND THE VERTICAL BAR AND THE BRACES, AND I'VE KNOWN

04:40:20 25   HOW TO READ AND INTERPRET THAT SINCE I WAS A KID.

04:40:23 1   Q.   AND DO YOU THINK THE 18 OR 20, DOES THAT CONSTITUTE ALL OF

04:40:36 2   THE NETWORKING EQUIPMENT VENDORS OVER THE PAST 10 OR 15 OR

04:40:42 3   20 YEARS?

04:40:42 4   A.   ALL OF THEM?

04:40:44 5   Q.   YEAH.

04:40:44 6   A.   I WOULDN'T SAY ALL OF THEM, THERE DEFINITELY ARE NETWORK

04:40:48 7   VENDORS THAT JUST MAKE WIRELESS DEVICES. THERE MAY BE SOME

04:40:55 8   THAT I JUST MISSED.

04:40:56 9   I TRIED TO GET ALL OF THE VENDORS THAT I HEARD OF,

04:40:59 10   ARISTA'S ATTORNEYS MENTIONED A COUPLE OF MORE THAT I ADDED INTO

04:41:02 11   THE PILE. I NEVER HEARD OF PROCKET OR NEXT TOP BEFORE, SO I

04:41:05 12   ADDED THOSE IN AS WELL. SO I COVERED WHAT I THOUGHT WAS MANY

04:41:08 13   VENDORS, BUT CERTAINLY NOT EVERY VENDOR.

04:41:11 14   Q.   ALL RIGHT.

04:41:12 15   IN GENERAL, WHAT WAS YOUR CONCLUSION FROM LOOKING AT ALL

04:41:15 16   OF THESE MANUALS FROM ALL OF THESE VENDORS?

04:41:18 17   A.   SO MY CONCLUSION WAS LOOKING AT EACH OF THESE 506 AND

04:41:23 18   LOOKING THEM UP, A MANUAL FROM EACH VENDOR, THAT WAS THERE IS

04:41:28 19   VERY WIDESPREAD ADOPTION OF HUNDREDS OF THESE COMMANDS BY TEN

04:41:32 20   OR SOMETIMES 15 OR EVEN MORE OF THESE VENDORS.

04:41:36 21   Q.   WAS THAT A SURPRISE TO YOU?

04:41:42 22   A.   I MEAN, I GUESS SOMEWHAT. I KNEW BECAUSE I'VE USED DELL

04:41:45 23   AND I KNEW THAT OTHER VENDORS HAD IOS-LIKE CLI'S, THAT THERE

04:41:53 24   WOULD BE SOME MEASURE OF ADOPTION, I DIDN'T REALIZE IT WAS

04:41:57 25   GOING TO BE AS FAR REACHING AS IT WAS.

04:41:59	1	Q. HAVE YOU SEEN ANY DOCUMENTS IN THIS CASE THAT SHOW AN
04:42:05	2	AWARENESS IN THE NETWORKING COMMUNITY THAT OTHERS USE A
04:42:10	3	CISCO-LIKE OR IOS-LIKE CLI?
04:42:13	4	A. I THINK WE'VE SEEN A BUNCH OF EVIDENCE, PEOPLE HAVE CALLED
04:42:17	5	THEIR CLI IOS-LIKE OR INDUSTRY STANDARD IN THEIR BROCHURES. I
04:42:23	6	THINK, IN FACT I KNOW THAT BLADE NETWORK TECHNOLOGIES WHICH WAS
04:42:26	7	ACQUIRED BY IBM, THEY ACTUALLY CALL THEIR CLI IS-CLI, WHERE THE
04:42:32	8	I SIS INDUSTRY STANDARD.
04:42:35	9	SO I THINK THERE'S QUITE A BIT OF EVIDENCE.
04:42:37	10	Q. WELL LET ME ASK YOU TO LOOK AT EXHIBIT 5001 IN YOUR
04:42:42	11	BINDER.
04:42:49	12	A. OKAY.
04:42:50	13	Q. DO YOU RECOGNIZE THAT?
04:42:52	14	A. YES, I DO.
04:42:53	15	Q. WHAT IS THAT?
04:42:54	16	A. THAT IS A PATENT THAT I WOULD CALL THE '886 PATENT BECAUSE
04:43:01	17	THAT'S WHAT IT ENDS IN.
04:43:02	18	Q. ALL RIGHT. AND DO YOU KNOW WHOSE PATENT THIS IS?
04:43:06	19	A. IF I RECALL, THIS IS A PATENT THAT IS CISCO'S.
04:43:12	20	MR. FERRALL: YOUR HONOR, I OFFER EXHIBIT 5001 INTO
04:43:15	21	EVIDENCE.
04:43:16	22	MR. NELSON: IT'S OKAY, YOUR HONOR.
04:43:17	23	THE COURT: IT WILL BE ADMITTED.
04:43:17	24	(DEFENDANT'S EXHIBIT 5001 WAS ADMITTED INTO EVIDENCE.)
04:43:19	25	BY MR. FERRALL:

04:43:19 1   Q.   DID YOU CONSIDER THIS '886 PATENT AS PART OF EVALUATING

04:43:31 2   WHETHER THERE'S WIDESPREAD USAGE OF THE CLI COMMANDS IN THE

04:43:35 3   NETWORKING INDUSTRY?

04:43:37 4   A.   YES.

04:43:37 5   Q.   AND WHAT DOES THIS PATENT SAY IN THAT REGARD?

04:43:40 6   A.   IT MORE OR LESS SAYS IN THE FRONT PART OF ENGLISH PORTION

04:43:45 7   OF THE PATENT, PAGE -- BATES 037, IT SAYS THAT --

04:43:48 8   Q.   LET'S WAIT UNTIL MR. DAHM CAN PULL THAT UP.

04:43:51 9   A.   I'M SORRY.

04:43:56 10   Q.   I THINK IT'S THE FIRST PARAGRAPH; IS THAT RIGHT?

04:43:59 11   A.   I THINK IT MIGHT BE SORT OF THE END OF THE FIRST

04:44:03 12   PARAGRAPH, I DON'T REMEMBER SITTING HERE RIGHT NOW. IT IS THE

04:44:08 13   MIDDLE OF THE PARAGRAPH IT SAYS "MANY COMPANIES NOW STRIVE."

04:44:11 14   Q.   RIGHT. CAN YOU READ THAT?

04:44:12 15   A.   SURE.

04:44:13 16   "MANY COMPANIES NOW STRIVE TO SUPPORT SOME VARIATION ON

04:44:17 17   IOS CLI IN THEIR ROUTING SYSTEMS, AND MANY CONSUMERS HAVE

04:44:20 18   INVESTED HEAVILY IN IOS CLI SUPPORT, DEVELOPING COMPLICATED

04:44:27 19   SCRIPTS TO HANDLE VARIOUS CONFIGURATION AND ACCESS NEEDS."

04:44:37 20   Q.   THIS IS CISCO MAKING THIS STATEMENT, YOU UNDERSTAND?

04:44:40 21   A.   YES.

04:44:40 22   Q.   OKAY. NOW, LET'S TURN, I THINK YOU MENTIONED PROCKET AS

04:44:47 23   ONE OF THE COMPANIES YOU LOOKED AT?

04:44:49 24   A.   TO THE EXTENT THAT I COULD GET A HOLD OF MANUALS, I DID

04:44:52 25   LOOK AT PROCKET, YES.

04:44:53 1   Q.   AND DID YOU PREPARE A SUMMARY OF THE FINDINGS WITH REGARD

04:45:02 2   TO THE PROCKET MANUALS THAT YOU WERE ABLE TO REVIEW?

04:45:06 3   A.   YES, I DID.

04:45:07 4   Q.   IF YOU COULD LOOK AT EXHIBIT 9052.

04:45:26 5   A.   OKAY.

04:45:27 6   Q.   IS THAT YOUR PROCKET SUMMARY?

04:45:29 7   A.   YES, IT IS.

04:45:30 8   Q.   AND THAT'S BASED UPON YOUR REVIEW AND EXTRACTION OF

04:45:36 9   COMMANDS FROM PROCKET MANUALS?

04:45:38 10   A.   THAT'S RIGHT.

04:45:39 11   MR. FERRALL: YOUR HONOR, I WOULD OFFER EXHIBIT 9052

04:45:42 12   IN EVIDENCE.

04:45:42 13   MR. NELSON: NO OBJECTION, YOUR HONOR.

04:45:45 14   THE COURT: ALL RIGHT. IT WILL BE ADMITTED.

04:45:50 15   (DEFENDANT'S EXHIBIT 9052 WAS ADMITTED INTO EVIDENCE.)

04:45:50 16   BY MR. FERRALL:

04:45:51 17   Q.   WHAT DOES 9052 SHOW?

04:45:53 18   A.   IT SHOWS A LIST OF CLI COMMANDS FROM, THAT I WAS ABLE TO

04:45:56 19   FIND IN PROCKET MANUALS, AND IT SHOWS A TOTAL OF 296.

04:46:02 20   Q.   AND THIS IS FROM THE 2003, 2004 TIME PERIOD; IS THAT

04:46:09 21   RIGHT?

04:46:09 22   A.   THAT'S RIGHT.

04:46:10 23   Q.   AND WAS THERE A REASON THAT YOU WERE INTERESTED IN SEEING

04:46:18 24   THE USAGE OF CLI COMMANDS IN THE 2003, 2004 TIME PERIOD?

04:46:24 25   A.   YEAH. SO I SAW A LETTER FROM STANFORD TO CISCO.

04:46:31 1   APPARENTLY, I DON'T KNOW ALL THE LEGAL UNDERPINNINGS, BUT

04:46:34 2   APPARENTLY CISCO HAD TO ASK STANFORD FOR PERMISSION TO PURSUE

04:46:42 3   OTHER COMPANIES THEY THOUGHT WERE INFRINGING AND THEY ASKED FOR

04:46:45 4   PERMISSION TO SUE HUAWEI, PROCKET, JUNIPER, DELL, AND FORCE10.

04:46:50 5   AND AS WE ALL NOW KNOW, CISCO PURSUED HUAWEI. AND I WAS

04:46:56 6   CURIOUS AS TO WHY, TO MY KNOWLEDGE, THEY DIDN'T PURSUE THESE

04:47:00 7   OTHER COMPANIES, AND I WAS WONDERING WHAT THEIR CLI OVERLAPS

04:47:04 8   WERE IN THE RELEVANT TIME PERIOD.

04:47:05 9   Q.   OKAY. AND HAVE YOU EVER HEARD ANYTHING ABOUT PROCKET

04:47:15 10   TAKING CISCO'S SOURCE CODE?

04:47:16 11   A.   NO.

04:47:17 12   Q.   OKAY. SO YOU HEARD THE ALLEGATION THAT IS HUAWEI TOOK

04:47:20 13   CISCO'S SOURCE CODE; RIGHT?

04:47:21 14   A.   YES.

04:47:23 15   Q.   ALL RIGHT. SO YOU FOUND PROCKET HAD HOW MANY COMMON CLI

04:47:28 16   COMMANDS?

04:47:29 17   A.   I THINK IT WAS 296.

04:47:33 18   Q.   AND HAVE YOU EVER HEARD ANY EVIDENCE THAT CISCO PURSUED A

04:47:38 19   CLAIM AGAINST PROCKET?

04:47:39 20   A.   NOT TO MY KNOWLEDGE.

04:47:42 21   Q.   OR ANY OF THE OTHER COMPANIES THAT YOU LISTED THAT WERE

04:47:48 22   THE SUBJECT OF THIS LETTER TO STANFORD?

04:47:50 23   A.   NOT TO MY KNOWLEDGE.

04:47:52 24   Q.   OKAY. NOW GOING TO CURRENT, YOU LOOKED AT 18-SOME

04:48:01 25   VENDORS. DID YOU TRY TO COMPILE ALL OF THE RESULTS THAT YOU

04:48:05 1   FOUND FROM ALL 18 VENDORS?

04:48:07 2   A.   I DID, YES.

04:48:08 3   Q.   AND IF YOU COULD LOOK AT 9041, PLEASE.

04:48:19 4   A.   OKAY.

04:48:20 5   Q.   WHAT IS THAT?

04:48:22 6   A.   THIS IS A SORTED LIST OF ALL OF THE ASSERTED COMMANDS, I

04:48:29 7   DON'T THINK IT HAS ALL OF THEM, BUT IT AS MANY OF THE ASSERTED

04:48:33 8   COMMANDS BY THE NUMBER OF VENDORS ADOPTING EACH OF THOSE

04:48:37 9   COMMANDS.

04:48:37 10   MR. FERRALL: OKAY.   AND YOUR HONOR, I WOULD LIKE TO

04:48:39 11   USE THIS AS A DEMONSTRATIVE.

04:48:40 12   THE COURT: OKAY.

04:48:41 13   MR. FERRALL: IF WE COULD PUT UP 9041, PLEASE.

04:48:49 14   Q.   COULD YOU EXPLAIN TO THE JURY HERE WHAT IS SHOWN AT THE

04:48:53 15   TOP 20, 30 LINES HERE?

04:48:55 16   A.   SURE.   SO LINE 1, IP ADDRESS, THAT'S ASSERTED BY CISCO IN

04:48:59 17   THIS LAWSUIT, AND I WAS ABLE TO FIND A COMMAND IP ADDRESS IN 18

04:49:04 18   OTHER VENDOR MANUALS.

04:49:06 19   AND THEN GOING DOWN THE LIST, "SHOW CLOCK," 17 OTHER

04:49:09 20   VENDOR MANUALS, AND SO FORTH DOWN THE LIST.   AND YOU WILL

04:49:12 21   NOTICE IT'S SORT DESCENDING ON THE RIGHT-HAND COLUMN.

04:49:18 22   Q.   AND THIS GOES ON FOR HOW MANY PAGES?

04:49:20 23   A.   THEY ARE NOT NUMBERED, BUT ABOUT TEN.

04:49:23 24   Q.   AND SOME OF THE COMMANDS ONLY HAVE MAYBE TEN VENDORS?

04:49:30 25   A.   YEAH.   I MEAN, IF YOU GO A COUPLE OF PAGES DOWN, THEN YOU

04:49:34 1   CAN SEE SOME, I GUESS THE 140TH COMMAND LISTED HERE HAS NINE

04:49:44 2   VENDORS ADOPTING THAT COMMAND.

04:49:45 3   Q.   OKAY. SO FOR THIS -- THIS MEANS FOR THE 140TH COMMAND,

04:49:54 4   THERE ARE NINE VENDORS WHO ARE USING IT, IF FOR THOSE 140 THAT

04:50:00 5   ARE ABOVE THIS IN THE CHART, THERE'S NINE OR MORE VENDORS USING

04:50:04 6   THAT COMMAND; IS THAT RIGHT?

04:50:05 7   A.   THAT'S RIGHT. AND TO BE CLEAR, ARISTA AND CISCO ARE NOT

04:50:07 8   COUNTED HERE, THESE ARE OTHER VENDORS.

04:50:09 9   Q.   OKAY. NOW WITH REGARD TO DELL, WERE YOU ABLE TO DO A

04:50:17 10   LITTLE BIT DIFFERENT ANALYSIS REGARDING DELL?

04:50:21 11   A.   YEAH. SO FOR DELL, WELL, ACTUALLY FOR EVERYONE, BUT I

04:50:24 12   STARTED WITH DELL, I TRIED TO WRITE COMPUTER PROGRAMS SO THAT I

04:50:28 13   DIDN'T TO MANUALLY GO THROUGH THESE MANUALS MYSELF AND SCRAPE

04:50:32 14   THE MANUALS AND CONVERT THEM AND DO AN AUTOMATED COMPARISON.

04:50:38 15   AND I DID THAT FOR DELL, BUT IT TOOK A VERY LONG TIME AND

04:50:42 16   I COULDN'T DO IT FOR EVERYONE ELSE.

04:50:44 17   Q.   HOW DID THE DELL COMPARISON DIFFER FROM THE SORT OF VENDOR

04:50:48 18   COUNT THAT WE JUST SAW?

04:50:53 19   A.   SO FOR THE CASE OF DELL I DID COMPLETE COMMAND COMPARISON.

04:50:57 20   SO THESE ARE VALID COMMANDS THAT ARE FULLY FORMED, THEY ARE NOT

04:51:00 21   JUST PARTS OF A COMMAND.

04:51:01 22   Q.   AND DID YOU CONSIDER ONLY THE 506 ASSERTED COMMANDS?

04:51:03 23   A.   NO, I CONSIDERED EVERY POSSIBLE OVERLAP BETWEEN CISCO AND

04:51:07 24   DELL.

04:51:07 25   Q.   OKAY. AND WHAT DID YOU FIND REGARDING THE OVERLAP BETWEEN

04:51:12 1   ALL CISCO COMMANDS THAT YOU COULD GATHER AND ALL OF THE DELL

04:51:19 2   COMMANDS THAT YOU COULD GATHER?

04:51:20 3   A.   I FOUND THAT AT LEAST 1400 COMMANDS, AND I OMITTED SINGLE

04:51:25 4   WORD COMMANDS SO AT LEAST 1400 MULTIWORD COMMANDS WERE SHARED

04:51:30 5   BETWEEN CISCO AND DELL.

04:51:31 6   Q.   AND IF YOU COULD LOOK AT EXHIBIT 9049 IN YOUR BINDER.

04:51:38 7   A.   OKAY.

04:51:38 8   Q.   WHAT IS THAT?

04:51:44 9   A.   IT'S THE LIST I JUST DESCRIBED WITH THE SINGLE WORD

04:51:48 10 COMMANDS STILL IN THERE. I THINK WE WANT A DIFFERENT EXHIBIT,

04:51:55 11 MAYBE.

04:51:56 12 Q.   WE DO, WE DO. OKAY. WE WILL COME BACK TO THAT ALSO.

04:52:05 13   DID YOU LOOK AT -- YOU LOOKED AT OTHER VENDORS LIKE

04:52:10 14 JUNIPER.

04:52:11 15 A.   I DID.

04:52:12 16 Q.   OKAY. AND DID YOU LOOK AT BROCADE AND FOUNDRY?

04:52:20 17 A.   RIGHT, YES.

04:52:21 18 Q.   ALL RIGHT. IF YOU COULD PULL UP 5630, PLEASE. OR IF YOU

04:52:30 19 COULD LOOK AT 5630.

04:52:39 20 A.   OKAY.

04:52:41 21 Q.   IS THAT YOUR SUMMARY OF YOUR RESULTS OF ANALYZING BROCADE

04:52:50 22 AND FOUNDRY COMMANDS?

04:52:53 23 A.   YES IT IS.

04:52:54 24 Q.   AND TO BE CLEAR, WITH REGARD TO BROCADE AND FOUNDRY, YOU

04:52:57 25 WERE ONLY COMPARING THE ASSERTED COMMANDS?

04:53:00 1   A.   I LIMITED MY MANUAL LOOK UPS TO JUST THOSE ASSERTED

04:53:06 2   COMMANDS, YES.

04:53:07 3   MR. FERRALL: AND YOUR HONOR, WE OFFER EXHIBIT 5630

04:53:10 4   AS A SUMMARY IN EVIDENCE.

04:53:11 5   MR. NELSON: NO OBJECTION, YOUR HONOR.

04:53:12 6   THE COURT: IT WILL BE ADMITTED.

04:53:14 7   (DEFENDANT'S EXHIBIT 5630 WAS ADMITTED INTO EVIDENCE.)

04:53:14 8   BY MR. FERRALL:

04:53:16 9   Q.   SO IS THIS THE SORT OF RESULT YOU HAD FROM PERFORMING YOUR

04:53:20 10   ANALYSIS OF ASSERTED COMMANDS TO VENDOR USAGE?

04:53:30 11   A.   YES, IT IS, FOR BROCADE, AND IT'S THE FIRST PAGE OF SEVEN.

04:53:35 12   Q.   AND THE HOW MANY COMMANDS WERE YOU ABLE TO LOCATE IN

04:53:40 13   COMMON, OF THE 506 BETWEEN BROCADE AND CISCO?

04:53:44 14   A.   I DON'T HAVE IT MEMORIZED AND IT'S NOT, THEY ARE NOT

04:53:49 15   NUMBERED HERE, BUT IT WAS A COUPLE HUNDRED.

04:53:51 16   Q.   OKAY. ALL RIGHT. IF WE COULD LOOK AT 5635, PLEASE?

04:54:06 17   A.   I'M THERE.

04:54:07 18   Q.   IS THIS YOUR ANALYSIS WITH REGARD TO EXTREME NETWORKS?

04:54:10 19   A.   YES IT IS.

04:54:11 20   MR. FERRALL: AND YOUR HONOR, I WOULD MOVE

04:54:13 21   EXHIBIT 5635 IN EVIDENCE.

04:54:15 22   MR. NELSON: NO OBJECTION, YOUR HONOR.

04:54:16 23   THE COURT: IT WILL BE ADMITTED.

04:54:18 24   (DEFENDANT'S EXHIBIT 5635 WAS ADMITTED INTO EVIDENCE.)

04:54:18 25   BY MR. FERRALL:

04:54:20 1   Q.   AGAIN, THIS IS YOUR EXTREME ANALYSIS, SO TO SPEAK?

04:54:26 2   A.   YES.

04:54:26 3   Q.   ALL RIGHT.

04:54:27 4   AND DO YOU REMEMBER APPROXIMATELY HOW MANY COMMANDS WERE

04:54:30 5   IN COMMON OF THE 500, WERE IN COMMON BETWEEN CISCO AND EXTREME?

04:54:37 6   A.   IT WAS A COUPLE HUNDRED.

04:54:39 7   Q.   OKAY. AND LASTLY, IF I COULD ASK YOU TO LOOK AT 5637?

04:54:46 8   A.   OKAY, I'M THERE.

04:54:51 9   Q.   THIS IS YOUR ANALYSIS FOR COMPARING THE ASSERTED COMMANDS

04:54:55 10   TO HP?

04:54:56 11   A.   CORRECT.

04:54:57 12   MR. FERRALL: AND IF WE COULD MOVE EXHIBIT, I WOULD

04:55:00 13   LIKE TO MOVE EXHIBIT 5637 IN EVIDENCE, PLEASE.

04:55:03 14   MR. NELSON: NO OBJECTION, YOUR HONOR.

04:55:04 15   THE COURT: IT WILL BE ADMITTED.

04:55:08 16   (DEFENDANT'S EXHIBIT 5637 WAS ADMITTED INTO EVIDENCE.)

04:55:08 17   BY MR. FERRALL:

04:55:09 18   Q.   DO YOU REMEMBER APPROXIMATELY HOW MANY HP COMMANDS WERE IN

04:55:12 19   COMMON?

04:55:13 20   A.   I THINK IT WAS 1 OR 200.

04:55:15 21   Q.   ALL RIGHT.

04:55:22 22   NOW DID YOU ATTEMPT TO PULL TOGETHER ALL OF YOUR FINDINGS

04:55:32 23   REGARDING THESE DIFFERENT VENDORS AND THEIR COMMON USAGE OF

04:55:35 24   COMMANDS?

04:55:35 25   A.   YES.

04:55:36 1   Q.   IF WE COULD LOOK AT, AS A DEMONSTRATIVE, EXHIBIT 9061,

04:55:44 2   MR. DAHM, IF YOU COULD PULL THAT UP.

04:55:55 3   A.   I'M THERE.

04:55:56 4   Q.   WHAT'S THIS EXHIBIT?

04:55:58 5   A.   THIS IS A COMPILATION OF THE ANALYSIS WE JUST WALKED

04:56:06 6   THROUGH IN THOSE OTHER APPENDIXES.

04:56:09 7   Q.   COULD YOU JUST WALK US THROUGH THE DIFFERENT COLOR CODING

04:56:12 8   ON THIS CHART, EXPLAIN WHAT YOU ARE SHOWING?

04:56:15 9   A.   SURE. SO THERE'S A DIFFERENT COLOR FOR EACH VENDOR.

04:56:18 10   THERE ARE FIVE VENDORS. BROCADE IS RED, DELL IS ORANGE,

04:56:22 11   JUNIPER IS THIS OLIVE COLOR, HP BLUE, AND EXTREME IS THIS DARK

04:56:29 12   BLUE.

04:56:30 13   THEN ACROSS FROM EACH COMMAND, STARTING WITH, LET'S SAY

04:56:33 14   AAA ACCOUNTING, IF THERE'S A RED SQUARE, BROCADE HAS THAT

04:56:36 15   COMMAND, AN ORANGE ONE DELL, AND SO FORTH.

04:56:40 16   IF THE VENDOR DOESN'T HAVE THE COMMAND, THEN IT'S LEFT

04:56:42 17   WHITE.

04:56:43 18   Q.   OKAY. AND THE TITLE ON THIS ONE IS SUPPORTED BY AT LEAST

04:56:48 19   FOUR OF THESE VENDORS?

04:56:50 20   A.   RIGHT. SO THIS WAS A LIST OF COMMANDS THAT COMMANDS THAT

04:56:55 21   ARE USED BY AT LEAST FOUR OUT OF THE GIVEN FIVE.

04:56:59 22   Q.   AND HOW MANY COMMANDS FALL INTO THIS CATEGORY?

04:57:02 23   A.   LOOKING AT THE SECOND PAGE, 117.

04:57:06 24   Q.   AND THEN DID YOU FILTER IT FOR THE COMMANDS USED BY AT

04:57:11 25   LEAST THREE AND FEWER?

04:57:12 1   A.   YEAH, THAT'S THE NEXT PAGE DOWN.

04:57:14 2   Q.   OKAY. CAN YOU JUST SUMMARIZE, IF YOU FLIP THROUGH THE

04:57:18 3   EXHIBIT, AND TELL US HOW MANY VENDORS USE AT LEAST THREE OF

04:57:22 4   THESE COMMANDS?

04:57:23 5   A.   SURE. THE TOTAL THERE IS --

04:57:26 6   THE COURT: YOU DIDN'T MEAN THREE COMMANDS.

04:57:29 7   MR. FERRALL: SORRY. THANK YOU, THANK YOU,

04:57:30 8   YOUR HONOR.

04:57:33 9   LET ME REPHRASE, DR. BLACK.

04:57:36 10   Q.   IF YOU COULD SUMMARIZE HOW MANY OF THESE COMMANDS ARE USED

04:57:44 11   BY AT LEAST THREE VENDORS?

04:57:50 12   A.   SO FOR THE COMMANDS THAT ARE USED BY AT LEAST THREE OF

04:57:54 13   THOSE FIVE, THERE ARE 201 CONTINUING ON. THE NUMBER OF

04:57:58 14   COMMANDS USED BY AT LEAST TWO OF THE FIVE, 289 CLI COMMANDS,

04:57:58 15   AND THEN FINALLY -- I'M SORRY, 298, I MAY HAVE MISSPOKE.

04:58:16 16   AND THEN IN THE FINAL CASE, THE NUMBER OF COMMANDS USER BY

04:58:17 17   AT LEAST ONE OF THESE FIVE, IS 392.

04:58:23 18   Q.   OKAY. NOW IF WE COULD SPEAK FOR A SECOND ABOUT MODES.

04:58:34 19   THE DAY IS ALMOST OVER, BUT THIS WILL TAKE A MOMENT,

04:58:36 20   YOUR HONOR.

04:58:39 21   DID YOU LOOK FOR THE PRESENCE OF SIMILAR MODES ACROSS

04:58:45 22   THESE VENDORS?

04:58:47 23   A.   YES, I DID.

04:58:48 24   Q.   AND WHAT DID YOU FIND THERE?

04:58:49 25   A.   ONCE AGAIN, I LOOKED FOR THE FOUR ACCUSED MODES IN EACH OF

09:10:48 1   Q.   AND DID YOU CONSIDER THIS IN FORMING YOUR OPINIONS?

09:10:53 2   A.   YES, I DID.

09:10:54 3   Q.   AND DO YOU RECALL WHAT THIS RELATES TO, IN YOUR OPINIONS?

09:11:01 4   A.   THIS WAS A PRESENTATION BY CISCO DATED 2008.

09:11:09 5   AND I DON'T REMEMBER WHICH SLIDE IT'S ON, BUT I THINK

09:11:11 6   THERE'S A NUMBER THAT SAYS HOW MANY COMMANDS THERE ARE IN IOS.

09:11:21 7   MR. FERRALL: AND IF I COULD MOVE EXHIBIT 7543 IN

09:11:24 8   EVIDENCE, YOUR HONOR.

09:11:27 9   THE COURT: ANY OBJECTION?

09:11:27 10   MR. NELSON: NO OBJECTION, YOUR HONOR.

09:11:29 11   THE COURT: IT WILL BE ADMITTED.

09:11:30 12   (DEFENDANT'S EXHIBIT 7543 WAS ADMITTED INTO EVIDENCE.)

09:11:30 13   BY MR. FERRALL:

09:11:45 14   Q.   IF WE COULD LOOK AT SLIDE 14?

09:11:46 15   A.   I'M THERE.

09:11:47 16   Q.   IS THIS THE PAGE YOU WERE REFERRING TO REGARDING THE

09:11:49 17   NUMBER OF COMMANDS IN IOS?

09:11:51 18   A.   THIS IS THE ONE.

09:11:52 19   Q.   AND CAN YOU JUST POINT OUT FOR THE JURY WHAT YOU FOUND

09:11:56 20   HERE REGARDING THAT ISSUE?

09:11:58 21   A.   SURE. SO THE TOP BULLET SAYS, "AT THE TIME THE SDCD

09:12:03 22   PROJECT WAS STARTED, THERE WERE APPROXIMATELY 14K," PRESUMABLY

09:12:09 23   "K" MEANS A THOUSAND, "CISCO IOS COMMANDS DOCUMENTED IN THE

09:12:12 24   DOCUMENTATION DATABASE."

09:12:14 25   AND THERE'S AN ASTERISK REFERRING TO A FOOTNOTE, I ASSUME,

09:12:17 1   DOWN AT THE BOTTOM HERE, THAT ARE NOW OVER 16K COMMANDS

09:12:22 2   DOCUMENTED IN THE DOCUMENTATION DATABASE.

09:12:26 3   Q.   OKAY.   THANK YOU.

09:12:29 4   AND WOULD YOU EXPECT THAT SINCE THE TIME OF THIS

09:12:33 5   PRESENTATION, YOU WOULD EXPECT THAT THE NUMBER OF COMMANDS IN

09:12:37 6   IOS HAS GROWN OR SHRUNK, HOW WOULD YOU EXPECT IT TO HAVE

09:12:42 7   CHANGED?

09:12:42 8   A.   I DON'T HAVE ANY PERSONAL KNOWLEDGE, OF COURSE, OF WHAT

09:12:46 9   CISCO IS DOING, BUT I THINK WE'VE HEARD TESTIMONY THAT NOTHING

09:12:48 10   EVER COMES OUT.   SO I WOULDN'T EXPECT IT TO GET ANY SMALLER,

09:12:53 11   AND PERHAPS IT GOT BIGGER.

09:13:03 12   Q.   NOW YESTERDAY YOU GAVE SOME TESTIMONY REGARDING ARISTA'S

09:13:10 13   PRODUCTS AND HOW THEY WERE TRANSFORMATIVE?

09:13:11 14   A.   RIGHT.

09:13:12 15   Q.   AND I WANTED TO FOLLOW UP ON ONE OF THOSE POINTS WHICH WAS

09:13:17 16   REGARDING RELIABILITY, WHICH I THINK WAS ONE OF THE BASIS OF

09:13:22 17   YOUR TESTIMONY, YES?

09:13:23 18   A.   IT WAS, YES.

09:13:24 19   Q.   AND CAN YOU EXPLAIN WHAT YOU'VE RELIED UPON FOR PURPOSES

09:13:31 20   OF YOUR OPINION REGARDING THE RELIABILITY OF ARISTA'S PRODUCTS,

09:13:37 21   ARISTA'S EOS?

09:13:38 22   A.   OKAY. SO I BELIEVE I MADE -- I USED TWO THINGS THAT I

09:13:44 23   RELIED UPON.

09:13:45 24   ONE WAS THE MASTER THESIS FROM MR. PATIL WHO TALKED ABOUT

09:13:49 25   A NEW PARADIGM BECAUSE THEY HAD SEPARATE PROCESSES RUNNING.

09:35:08 1   506, THEN I CAN'T FIND MORE THAN 506, OF COURSE.

09:35:12 2   SO ALL THE NUMBERS WE JUST WENT THROUGH IN ALL THE

09:35:14 3   EXHIBITS, 100-SOMETHING, 300-SOMETHING, BUT NEVER MORE THAN

09:35:19 4   506, YOU COULDN'T GO ABOVE THAT BECAUSE I WAS LIMITING MY VIEW

09:35:22 5   TO JUST THE ACCUSED COMMANDS.

09:35:24 6   BUT HERE, I OPENED THE GATES AND LOOKED AT THE PRODUCT

09:35:28 7   ENTIRELY, OR THE MANUALS I HAD, AT LEAST. AND SO I WAS ABLE TO

09:35:31 8   FIND ROUGHLY THREE TIMES THAT MANY.

09:35:34 9   Q.   WHY DIDN'T YOU TRY TO FIND SIMILARITIES ACROSS THE ENTIRE

09:35:41 10   SPECTRUM OF CLI COMMANDS FOR OTHER COMPANIES OTHER THAN DELL?

09:35:46 11   A.   RIGHT.

09:35:47 12   SO WITHOUT GOING INTO THE COMPLEXITIES OF HOW PDF'S ARE

09:35:52 13   PUT TOGETHER, THERE ARE LOTS OF PROBLEMS. EACH TIME I WOULD

09:35:56 14   OPEN A NEW MANUAL, IT WOULD BE NEW PROGRAMMING CHALLENGES, AND

09:36:00 15   IT WAS JUST VERY TIME CONSUMING TO DO THIS ANALYSIS, AND THERE

09:36:04 16   WAS NO WAY I WAS GOING TO BE ABLE TO DO IT FOR EVERY OTHER

09:36:07 17   VENDOR.

09:36:11 18   Q.   NOW FOCUSSING ON THE 506 THAT ARE ASSERTED HERE, DO YOU

09:36:16 19   SEE IN THAT COMBINATION OF COMMANDS, DO YOU SEE -- IS THERE

09:36:23 20   SOME GUIDING PRINCIPAL TO THAT COMBINATION OF 506? DO YOU KNOW

09:36:31 21   HOW THOSE WERE SELECTED?

09:36:33 22   A.   I MEAN, THEY WERE SELECTED, I ASSUME, BY CISCO'S ATTORNEYS

09:36:35 23   OR CISCO'S ENGINEERS. AND I DON'T KNOW THE METHODOLOGY THEY

09:36:38 24   USED OTHER THAN, PERHAPS, TO LOOK DOWN THE TABLE OF CONTENTS IN

09:36:43 25   AN ARISTA MANUAL.

09:36:44 1   Q.   IS THERE -- I GUESS WHAT I'M ASKING, DR. BLACK IS, THE

09:36:51 2   506, WAS THAT SOME RANDOM SAMPLING OF COMMANDS, TO YOUR

09:36:55 3   KNOWLEDGE?

09:36:55 4   A.   NO.   I ASSUMED THEY LOOKED EXACTLY FOR THOSE COMMANDS THAT

09:36:59 5   WERE SHARED BETWEEN SOME CISCO OPERATING SYSTEM AND EOS, THE

09:37:04 6   ARISTA OPERATING SYSTEM.

09:37:10 7   Q.   AND IF YOU HAD BROADENED YOUR REVIEW OF OTHER COMPANY'S

09:37:14 8   USE OF CLI COMMANDS BEYOND THE 506, CAN YOU GIVE ANY SENSE OF

09:37:20 9   WHAT YOU WOULD HAVE EXPECTED TO FIND?

09:37:23 10 A.   I MEAN --

09:37:24 11   MR. NELSON: OBJECTION.   IT'S SPECULATION.

09:37:25 12   THE COURT: SUSTAINED.

09:37:26 13   THE WITNESS: I WAS GOING TO SAY, IT'S SPECULATION.

09:37:30 14   MR. FERRALL: DR. BLACK, YOU'RE LEARNING QUICKLY.

09:37:41 15 BY MR. FERRALL:

09:37:42 16 Q.   SO DR. BLACK, LET ME JUST ASK YOU THEN, IN LIGHT OF ALL

09:37:46 17 THAT YOU'VE DONE ANALYZING THESE OTHER VENDORS'S USE OF

09:37:51 18 COMMANDS, YOUR ANALYSIS OF THE OTHER FAIR USE FACTORS, CAN YOU

09:37:55 19 TELL THE JURY WHAT CONCLUSIONS YOU'VE REACHED REGARDING FAIR

09:37:58 20 USE?

09:37:58 21 A.   SURE.

09:38:00 22   SO ONCE AGAIN, I'M NOT A LAWYER, I HAD THE FOUR FACTORS

09:38:04 23 EXPLAINED TO ME BY ARISTA'S COUNSEL.   I WAS INSTRUCTED TO

09:38:09 24 CONSIDER THOSE FOUR FACTORS, LOOK AT THE EVIDENCE, AND GO DOWN

09:38:14 25 THE LIST.

09:39:45 1   YOUR TESTIMONY AND YOUR OPINIONS.

09:39:47 2   SO FIRST, YOU TALKED ABOUT ORIGINALITY IN THE BEGINNING;

09:39:51 3   RIGHT? DO YOU RECALL THAT.

09:39:52 4   A.   YES, I DID.

09:39:53 5   Q.   AND SO LET'S LAY SOME PARAMETERS THERE. WHEN YOU TALKED

09:39:57 6   ABOUT ORIGINALITY, YOU ARE GOING BACK TO THE TIME OF

09:40:00 7   CONFIGURATION OF THE COMMANDS, YOU UNDERSTAND THAT; RIGHT?

09:40:02 8   A.   WHEN I TALKED ABOUT ORIGINALITY, I WAS GOING BACK TO 1986.

09:40:08 9   SOME OF THE COMMANDS WEREN'T CREATED UNTIL VERY RECENTLY.

09:40:10 10   Q.   RIGHT. UNDERSTOOD.

09:40:11 11   SO WITH RESPECT TO THOSE OPINIONS, AND IF WE PUT UP, WE

09:40:15 12   CAN JUST PUT UP A PAGE FROM 9042, JUST TO REMIND EVERYBODY WHAT

09:40:19 13   YOU WERE TALKING ABOUT, I THINK THAT'S THE DEMONSTRATIVE YOU

09:40:21 14   USED.

09:40:22 15   SO YEAH, THIS IS THE FIRST PAGE. SO WHAT YOU WERE DOING

09:40:26 16   THERE, IF I UNDERSTOOD YOU CORRECTLY IS, YOU WENT THROUGH AND

09:40:32 17   LOOKED FOR FIRST LEGACY COMMAND TERMS; IN OTHER WORDS,

09:40:37 18   INDIVIDUAL TERMS THAT YOU SAW WERE USED IN OTHER SYSTEMS;

09:40:40 19   RIGHT?

09:40:40 20   A.   YES.

09:40:41 21   Q.   OKAY. THEN THAT'S THE BROWN STUFF?

09:40:43 22   A.   THAT'S THE BROWN STUFF.

09:40:44 23   Q.   AND I THINK THAT'S THE APPROPRIATE -- I MEAN, I'M SORRY,

09:40:47 24   THAT'S JUST THE WAY I TALK. I'M NOT TRYING TO DENIGRATE.

09:40:52 25   SO THEN THE NEXT ONE, YOU SAY INDUSTRY STANDARD TERM;

09:40:57   1   RIGHT?

09:40:57   2   A.   RIGHT.

09:40:58   3   Q.   OKAY. SO LET'S JUST CLARIFY THERE.

09:41:00   4   WHEN YOU ARE TALKING ABOUT INDUSTRY STANDARD, IN THIS

09:41:03   5   CONTEXT YOU ARE TALKING ABOUT A FORMAL INDUSTRY STANDARD BODY;

09:41:07   6   RIGHT?

09:41:07   7   A.   YEAH, I TRIED TO, IN THE DESCRIPTION, BE CLEAR ABOUT THAT

09:41:11   8   FACT.

09:41:11   9   Q.   RIGHT. AND THOSE ARE THE ONES YOU MARKED GREEN?

09:41:14   10   A.   YES, SIR.

09:41:14   11   Q.   AND AGAIN, WHAT YOU WERE DOING IS GOING THROUGH MANUALS OR

09:41:18   12   RFC'S, THINGS LIKE THAT?

09:41:20   13   A.   STANDARDS DOCUMENTS.

09:41:22   14   Q.   STANDARDS DOCUMENTS, THAT'S A GREAT WAY TO PHRASE IT.

09:41:27   15   YOU WERE GOING THROUGH STANDARDS DOCUMENTS THAT YOU SAY

09:41:30   16   PREDATED AND LOOKING FOR INDIVIDUAL TERMS IN THERE?

09:41:34   17   A.   CORRECT.

09:41:34   18   Q.   AND THEN YOU HAVE THE -- AND THAT'S THE GREEN, I THINK?

09:41:37   19   A.   THAT'S THE GREEN, YES.

09:41:38   20   Q.   THEN YOU HAVE THE BLUE, WHICH YOU SAY ARE COMMON INDUSTRY

09:41:43   21   TERMS; IS THAT RIGHT?

09:41:44   22   A.   CORRECT. I THINK I MAY HAVE WRITTEN COMMON NETWORKING

09:41:47   23   TERMS ON THE CHART THERE, BUT YES.

09:41:49   24   Q.   BUT YOU'RE EQUATING THOSE -- WHEN YOU ARE SAYING INDUSTRY

09:41:53   25   IN 9042, YOU MEAN THE NETWORKING INDUSTRY; RIGHT?

09:43:14 1   A.   I DIDN'T SEE IT, BECAUSE IT EXISTED A LONG TIME BEFORE

09:43:18 2   IPV6 CAME ALONG, BUT YOU COULD COME BACK AND CHANGE YOUR

09:43:22 3   TECHNOLOGY TO AS THE V4 AND PEOPLE WOULD KNOW WHAT THAT MEANT.

09:43:25 4   Q.   SO JUST SO WHEN YOU ARE GOING THROUGH AND DOING THAT

09:43:28 5   ANALYSIS ON ORIGINALITY, YOU DIDN'T OFFER ANY OPINION THAT ANY

09:43:31 6   OF THE ACTUAL COMMAND TERMS WERE FOUND IN ANY OF THESE

09:43:35 7   DOCUMENTS YOU LOOKED AT, RIGHT? THE COMMANDS THEMSELVES?

09:43:38 8   A.   YOU SAID COMMAND TERMS AT FIRST, SIR?

09:43:41 9   Q.   THEN I MISSPOKE, AND I SHOULD CORRECT THAT SO THAT WE HAVE

09:43:44 10   A CLEAN RECORD HERE.

09:43:47 11   YOU DIDN'T FIND THAT ANY OF THE 506 ASSERTED COMMANDS THAT

09:43:50 12   WE HAVE IN THE CASE, WERE FOUND IN ANY OF THE PRE-EXISTING

09:43:55 13   DOCUMENT; RIGHT?

09:43:56 14   A.   WELL, IF YOU LOOK HERE, SOME OF THESE ARE A SINGLE WORD,

09:44:00 15   OR AT LEAST IF YOU CONSIDER THE HYPHENATION TO COMBINE THEM

09:44:04 16   INTO A SINGLE WORD, ADDRESS FAMILY, AND AGGREGATE ADDRESS, I

09:44:08 17   DID FIND, PERHAPS WITHOUT THE HYPHEN.

09:44:10 18   AND SINCE THAT'S THE ENTIRETY OF THE COMMAND, AS WRITTEN,

09:44:13 19   THEN IN THAT CASE I DID FIND THE ENTIRE COMMAND.

09:44:18 20   Q.   OKAY. WITH RESPECT TO ANY OF THE OTHERS, YOU DIDN'T OFFER

09:44:23 21   ANY OPINIONS, CORRECT?

09:44:24 22   A.   I DID NOT.

09:44:24 23   Q.   SO WHAT YOU DID IS WENT THROUGH AND FOUND INDIVIDUAL WORDS

09:44:29 24   AND SAID HEY, THESE WORDS I'VE SEEN BEFORE; RIGHT, THAT'S THE

09:44:33 25   OWNING OPINION YOU ARE OFFERING ON THAT; RIGHT?

BLACK CROSS-EXAM BY MR. NELSON

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09:44:35  1    A.   I WOULD SAY MORE THAN I'VE SEEN BEFORE, I'M SAYING THEY
09:44:39  2    ACTUALLY APPEAR, FOR THE GREEN ONES, IN THE STANDARDS
09:44:42  3    DOCUMENTS.
09:44:42  4    Q.   RIGHT.  BUT YOU WOULD AGREE WITH ME -- LET'S TAKE A BOOK,
09:44:47  5    FOR EXAMPLE.  ANYBODY CAN WRITE A BOOK.  IF I WENT BACK AND
09:44:50  6    LOOKED IN A DICTIONARY, I WOULD FIND ALL THOSE WORDS; RIGHT?
09:44:52  7    A.   SURE, BUT WE ARE NOT LOOKING AT A DICTIONARY WHICH IS ALL
09:44:57  8    IN ENGLISH, WE ARE LOOKING AT A VERY SPECIFIC, LIMITED SET OF
09:44:59  9    INDUSTRY STANDARD DOCUMENTS.
09:45:00  10   Q.   WE COULD LIMIT IT A LITTLE BIT MORE.  I MEAN, WE COULD
09:45:02  11   BEING TALKING ABOUT A SPORT; RIGHT?  LET'S JUST SAY IT'S A
09:45:05  12   SOCCER MATCH.  THEN I HAVE A LIMITED SETS OF WORDS, BUT I COULD
09:45:08  13   PROBABLY FIND ALL OF THOSE WORDS THAT ANYBODY USES TO DESCRIBE
09:45:12  14   A SOCCER MATCH IN SOME PRE-EXISTING BOOKS; RIGHT?
09:45:15  15   A.   PERHAPS.
09:45:15  16   Q.   YEAH.  I MEAN, USUALLY WHEN WE WRITE THINGS, WE WRITE
09:45:18  17   THINGS USING PRE-EXISTING WORDS; RIGHT?
09:45:21  18   A.   RIGHT.  BUT I WOULD SAY SOME OF THESE REALLY AREN'T EVEN
09:45:24  19   WORDS.
09:45:24  20   Q.   WELL, RIGHT, BECAUSE SOME OF THEM YOU LEFT WHITE, WHICH
09:45:27  21   MEANS WITH THOSE COMMANDS CISCO, JUST MADE THOSE UP; RIGHT?
09:45:30  22   A.   NO, THAT'S NOT WHAT IT MEANS.
09:45:32  23   Q.   WELL, IT MEANS IT'S NOT COMMON; RIGHT?
09:45:37  24   A.   YES.
09:45:37  25   Q.   IT MEANS YOU DIDN'T FIND IT IN ANY INDUSTRY STANDARD
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09:45:43 1   DOCUMENTS?

09:45:43 2   A.   CORRECT.

09:45:44 3   Q.   AND IT MEANS IT'S NOT A LEGACY COMMAND TERM; RIGHT?

09:45:47 4   A.   CORRECT.

09:45:47 5   Q.   SO NOW I WANT TO TALK A LITTLE BIT THEN, JUST SO THAT WE

09:45:51 6   ARE ALL CLEAR, TO DISTINGUISH THE, WHAT YOU TALKED ABOUT THE

09:45:58 7   USAGE OF A NUMBER OF COMMANDS; RIGHT? THAT WAS THE SECOND PART

09:46:01 8   OF YOUR TESTIMONY?

09:46:02 9   A.   NOT RELEVANT TO THE SCREEN WE ARE LOOKING AT.

09:46:04 10   Q.   THAT'S EXACTLY WHAT I WANT TO ESTABLISH. SO WHEN YOU

09:46:09 11   TALKED ABOUT USAGE OF COMMANDS TO OTHER FOLKS THAT ALL COMES

09:46:13 12   AFTER CISCO?

09:46:13 13   A.   AFTER CISCO.

09:46:14 14   Q.   SO NOBODY SHOULD GET CONFUSED THAT YOU ARE OFFERING THE

09:46:17 15   OPINION THAT ALL OF THOSE CAME BEFORE CISCO CAME UP WITH THE

09:46:20 16   COMMAND TERMS OR THE COMMAND NAMES THAT ARE AT ISSUE HERE?

09:46:24 17   A.   NO, I HOPE I WAS CLEAR ON THAT POINT.

09:46:26 18   Q.   OKAY. SO NOW ONE THING, YOU WERE HERE FOR SOME OF THE

09:46:32 19   TESTIMONY OF THE CISCO ENGINEERS; RIGHT?

09:46:33 20   A.   YES, I WAS.

09:46:34 21   Q.   AND YOU HEARD THIS IDEA ABOUT THE SEQUENCING OF THE TERMS;

09:46:39 22   RIGHT?

09:46:39 23   A.   I'M VERY FAMILIAR WITH THAT IDEA, SURE.

09:46:41 24   Q.   RIGHT. AND YOU DIDN'T -- I DIDN'T HEAR YOU ADDRESS THAT

09:46:45 25   IN YOUR DIRECT TESTIMONY?

09:48:05 1   A.   AND CONSISTENCY WITH ALL THE PRECEDING CLI'S THAT DID THE

09:48:08 2   SAME THING, AND THAT'S WHAT ENGINEERS WOULD EXPECT.

09:48:11 3   Q.   OKAY. WELL, THERE ARE MANY TIMES WHERE WE SAW EXAMPLES OF

09:48:16 4   HIERARCHIES THAT HAD NOTHING TO DO WITH PRE-EXISTING SYSTEMS,

09:48:19 5   CORRECT?

09:48:20 6   A.   I DON'T KNOW. I WOULDN'T SAY NOTHING, BUT THEY WERE LESS

09:48:23 7   SIMILAR THAN THE SHOW COMMAND.

09:48:24 8   Q.   RIGHT. AND SO YOU ARE NOT SAYING, SIR, LET'S SAY SOMEBODY

09:48:33 9   WRITES A BOOK AND IT'S GOT SOME CHARACTER IN IT; RIGHT?

09:48:36 10   A.   YOU MEAN LIKE AN ALPHABETICAL CHARACTER.

09:48:38 11   Q.   NO, NO, NO, NOT THAT KIND OF CHARACTER. LIKE A BRITISH

09:48:42 12   SPY. AND HE'S MAKING MARTINIS, AND THEY ARE SHAKEN AND NOT

09:48:48 13   STIRRED, AND HE'S GOT A NUMBER LIKE 007?

09:48:51 14   A.   I'M WITH YOU NOW.

09:48:52 15   Q.   AND SOMEBODY, THE SAME GUY, WRITES THE SECOND BOOK IN THAT

09:49:02 16   SERIES AND HE USES THE SAME CHARACTER; RIGHT?

09:49:04 17   A.   SURE.

09:49:04 18   Q.   YOU ARE NOT SAYING THAT THE SECOND TIME HE WROTE THAT,

09:49:07 19   THAT HE WAS EXTERNALLY CONSTRAINED, ARE YOU?

09:49:10 20   A.   I MEAN, IT'S FAIRLY HYPOTHETICAL, AND I'M NOT AN EXPERT ON

09:49:15 21   NOVELS AND SPIES, BUT I ASSUME THAT IF, YOU KNOW, YOU ARE

09:49:19 22   WRITING A BOOK, THERE'S PROBABLY A MIXTURE OF EXTERNAL

09:49:23 23   CONSTRAINTS AND INTERNAL CONSTRAINTS.

09:49:25 24   Q.   BUT YOU ARE NOT OFFERING US THE OPINION THAT, IN THAT

09:49:28 25   EXAMPLE, THAT BECAUSE SOMEBODY WANTED TO BE CONSISTENT WITH

09:49:31 1   WHAT THEY HAD ALREADY DONE, THAT THERE'S NO PROTECTION FOR THE

09:49:34 2   SECOND BOOK; RIGHT?

09:49:35 3   A.   I COULDN'T OFFER AN OPINION LIKE THAT.

09:49:38 4   Q.   IT DOESN'T MAKE ANY SENSE?

09:49:40 5   A.   IT SOUNDS LIKE A LEGAL OPINION.

09:49:42 6   Q.   BUT IT DOESN'T MAKE ANY SENSE ANYWAY; RIGHT?

09:49:45 7   A.   I CAN'T HELP YOU THERE, SIR.

09:49:47 8   Q.   NOW I JUST WANT TO TALK ABOUT THIS SEQUENCING.

09:49:50 9   YOU HEARD THE TESTIMONY THAT PART OF THE -- THE SEQUENCING

09:49:57 10   WAS IMPORTANT HERE BECAUSE THAT WAS AN ATTEMPT BY THE ENGINEERS

09:50:00 11   TO DETERMINE WHETHER TO CREATE A NEW HEIRARCHY OR PUT IT INTO

09:50:03 12   AN EXISTING HIERARCHY, FOR EXAMPLE; RIGHT?

09:50:05 13   A.   YES.

09:50:05 14   Q.   AND YOU AGREE WITH THAT, YOU DON'T DISPUTE THAT TESTIMONY;

09:50:08 15   RIGHT?

09:50:08 16   A.   THAT'S -- THAT ONE OF THE THINGS YOU DECIDE FOR THE NEW

09:50:12 17   COMMAND IS CHOOSING A HIERARCHY IN WHICH IT WOULD BE PLACED?

09:50:16 18   Q.   OR WHETHER TO CREATE A NEW HIERARCHY; RIGHT?

09:50:21 19   A.   SURE.

09:50:22 20   Q.   AND THAT SEQUENCING IS IMPORTANT; RIGHT?

09:50:25 21   A.   I THINK THAT YOU WANT TO CREATE A COMMAND THAT'S AS CLOSE

09:50:32 22   AS WHAT YOUR ENGINEERS, YOUR USERS ARE GOING TO EXPECT, SO

09:50:36 23   SURE.

09:50:36 24   Q.   RIGHT. AND THAT SEQUENCING, YOU SAW THE PROCESS, WAS

09:50:39 25   ACTUALLY A CHOICE THAT THEY MAKE, CORRECT?

09:54:06 1   THAT'S ONE OF THE CONSIDERATIONS.

09:54:07 2   Q.   THAT'S ONE OF THE EXAMPLES OF POTENTIALLY BAD COMMANDS;

09:54:11 3   RIGHT?

09:54:11 4   A.   IN CERTAIN CASES, YES.

09:54:12 5   Q.   BUT YOU KNOW FROM LOOKING THROUGH JUST THE COMMANDS THAT

09:54:15 6   ARE ASSERTED IN THIS CASE, THAT WAS OFTEN REJECTED BY THE

09:54:18 7   ENGINEERS, CORRECT?

09:54:20 8   A.   NO, I WOULDN'T AGREE.

09:54:22 9   Q.   YOU DON'T.

09:54:24 10   IF WE GO BACK TO 9042. YOU SEE HERE YOU PICKED THOSE TWO,

09:54:41 11   ADDRESS-FAMILY AND AGGREGATE-ADDRESS; RIGHT?

09:54:45 12   A.   CORRECT.

09:54:45 13   Q.   THAT'S NOT VERY EXTENSIBLE ANYMORE; RIGHT?

09:54:48 14   A.   SO I THINK WITHOUT GOING INTO TOO MUCH HOW PARSERS WORK

09:54:54 15   AND SO FORTH, IF YOU PUT "AGGREGATE SPACE ADDRESS," THAT LEAVES

09:54:57 16   YOU ELBOW ROOM TO HAVE "AGGREGATE SPACE OTHER THINGS." BUT IF

09:55:01 17   YOU PUT AGGREGATE-ADDRESS, THEN YOU ARE SORT OF LOCKED IN. AND

09:55:05 18   I THINK THAT'S WHAT THE PARSER-POLICE DOCUMENT IS TALKING

09:55:07 19   ABOUT.

09:55:07 20   Q.   RIGHT. THAT'S EXACTLY WHAT I'M SAYING.

09:55:10 21   WHAT YOU WOULD SEE HERE, THE TWO YOU PICKED OUT, THOSE

09:55:13 22   WOULD BE EXAMPLES IN THE PARSER-POLICE DOCUMENTS OF BAD

09:55:16 23   COMMANDS; RIGHT.

09:55:16 24   A.   NO. I THINK IT MAKES SENSE TO TERMINATE WHAT THEY CALL

09:55:20 25   THE PARSE TREE.

09:55:21 1   IN CERTAIN CASES, I THINK THE DOCUMENT IS TALKING ABOUT

09:55:24 2   THAT AS ONE OF THE THINGS YOU HAVE TO DECIDE IF YOU GOING TO

09:55:28 3   TERMINATE OR LEAVE IT EXTENSIBLE.

09:55:30 4   Q.   RIGHT. EXACTLY. ONE OF THE THINGS YOU HAVE TO DECIDE

09:55:37 5   WHERE, YOU, IS BEING AN ENGINEER CREATING THE COMMAND; RIGHT?

09:55:41 6   A.   THE PROGRAMMER CREATING THE COMMAND HAS TWO CHOICES, YES.

09:55:45 7   Q.   YEAH, EXACTLY.

09:55:47 8   OKAY. SO NOW I WOULD LIKE TO GO TO YOUR SLIDE 14.

09:55:57 9   A.   IN MY DEMONSTRATIVES?

09:55:58 10   Q.   YEAH. SO HERE YOU WERE TALKING ABOUT THE MODES AND

09:56:09 11   PROMPTS IN PRIOR SYSTEMS; RIGHT?

09:56:10 12   A.   YES.

09:56:10 13   Q.   AND YOU SET OUT TWO MODES, PRIVILEGE MODE AND NONPRIVILEGE

09:56:16 14   MODE; RIGHT?

09:56:17 15   A.   YES.

09:56:17 16   Q.   SO IN ALL OF THE THINGS YOU LOOKED THROUGH, YOU NEVER

09:56:19 17   FOUND A GLOBAL CONFIGURATION MODE, CORRECT?

09:56:21 18   A.   NOT PRIOR TO CISCO.

09:56:23 19   Q.   RIGHT. AND IN ALL THE THINGS YOU LOOKED FOR, YOU NEVER

09:56:26 20   FOUND AN INTERFACE CONFIGURATION MODE, CORRECT?

09:56:28 21   A.   THAT'S CORRECT.

09:56:29 22   Q.   AS WELL AS THE CORRESPONDING PROMPTS TO THOSE, CORRECT?

09:56:33 23   A.   IF YOU CAN CLARIFY PROMPT. THE HASH SIGN IS STILL USED IN

09:56:40 24   THE MODES YOU NAMED.

09:56:40 25   Q.   CORRECT. BUT THE PROMPTS FOR THOSE MODE INCLUDE THE

09:56:45 1   CONFIGURATION LETTERS, CORRECT?

09:56:47 2   A.   THEY INCLUDE THE HOST NAME OF THE DEVICE, WHICH IS

09:56:52 3   CONFIGUREABLE BY THE USER, THEN IN PARENTHESES, THAT CONFIG AND

09:56:57 4   CONFIG-IF.

09:56:57 5   Q.   RIGHT. YOU DIDN'T FIND THAT PROMPT IN ANY OF THE MANY

09:57:01 6   DOCUMENTS THAT YOU LOOKED THROUGH FOR SYSTEMS THAT CAME BEFORE,

09:57:04 7   CORRECT?

09:57:04 8   A.   THE HOST NAME WOULD BE THERE IN THOSE DOCUMENTS, BUT THAT

09:57:07 9   PARENTHETICAL, I DIDN'T FIND.

09:57:08 10   Q.   RIGHT.

09:57:10 11   AND YOU UNDERSTAND, SIR, THAT WHAT'S BEING ASSERTED IN THE

09:57:13 12   CASE IS THAT PARTICULAR ARRANGEMENT OF THOSE FOUR MODES AND

09:57:16 13   PROMPTS; RIGHT?

09:57:16 14   A.   I ACTUALLY HAVE BEEN UNCLEAR WHAT EXACTLY CISCO IS

09:57:20 15   CLAIMING PROTECTION FOR THEIR -- I UNDERSTAND IT'S NOT THE

09:57:25 16   ACTUAL WORD INSIDE THE PARENTHESIS, MY UNDERSTANDING NOW IS

09:57:32 17   IT'S THE ORDER OF THE WORDS; IS THAT CORRECT?

09:57:35 18   Q.   IT'S THE ARRANGEMENT OF THE MODES AND PROMPTS, CORRECT?

09:57:38 19   SO YOU UNDERSTAND THAT?

09:57:39 20   A.   I THINK SO.

09:57:40 21   Q.   SO TWO OF THE MODES YOU DIDN'T FIND AT ALL; RIGHT?

09:57:43 22   A.   I DIDN'T FIND THOSE TWO MODES YOU NAMED, YES.

09:57:45 23   Q.   RIGHT. SO THEN IT GOES WITHOUT SAYING THAT THAT

09:57:48 24   PARTICULAR ARRANGEMENT OF THE FOUR MODES AND PROMPTS, YOU

09:57:51 25   DIDN'T FIND AT ALL?

09:57:52 1   A.   I DIDN'T FIND THAT ORDERING BECAUSE I DIDN'T FIND THE

09:57:55 2   MODES.

09:57:56 3   Q.   RIGHT.

09:57:56 4   SO NOW I WANT TO TALK ABOUT A FEW OTHER THINGS.

09:58:09 5   SO ONE OF THE THINGS YOU HAD SAID IS YOU DIDN'T THINK THAT

09:58:16 6   THERE WAS A SUBSTANTIAL AMOUNT OF THE WORK THAT WAS TAKEN,

09:58:24 7   CORRECT?

09:58:24 8   A.   I'M UNCLEAR ON WHAT YOU ARE ASKING.

09:58:28 9   Q.   OKAY. SO ONE OF YOUR FAIR USE FACTORS, YOU TALKED ABOUT

09:58:31 10   THE AMOUNT OF THE WORK. YOU PUT UP A SLIDE AND SAID THERE'S

09:58:37 11   441 COMMANDS THAT ARE ACCUSED FROM IOS AND THERE'S 16,000

09:58:41 12   COMMANDS IN ALL OF IOS; RIGHT?

09:58:43 13   A.   I RECALL THAT, YES.

09:58:44 14   Q.   YOU DIDN'T ADDRESS THE QUALITY OF THAT THOUGH; RIGHT?

09:58:55 15   A.   IN WHAT SENSE DO YOU MEAN THE "QUALITY" OF THAT?

09:58:59 16   Q.   THE QUALITY OF WHAT WAS TAKEN; RIGHT?

09:59:03 17   A.   NOT IN THE WAY I'M UNDERSTANDING YOUR QUESTION.

09:59:08 18   Q.   RIGHT. YOU SIMPLY JUST LOOKED AT THE NUMBERS, YOU

09:59:11 19   COMPARED ONE NUMBER TO ANOTHER, CORRECT?

09:59:14 20   A.   I TOOK CISCO'S NUMBER DIVIDED BY CISCO'S NUMBER.

09:59:17 21   Q.   THAT'S IT?

09:59:18 22   A.   THAT'S IT.

09:59:19 23   Q.   OKAY. SO SIR, YOU WERE HERE FOR MR. DR. LI -- EXCUSE ME,

09:59:25 24   DR. LI'S TESTIMONY, CORRECT?

09:59:26 25   A.   I WAS.

09:59:26 1   Q.   AND HE WAS TALKING ABOUT PROCKET?

09:59:28 2   A.   HE WAS.

09:59:29 3   Q.   AND YOU RECALL WHEN HE SAID IT DOESN'T MAKE ANY SENSE TO

09:59:33 4   TAKE COMMANDS FOR FEATURES THAT AREN'T IN YOUR PRODUCTS?

09:59:38 5   A.   I THINK HE MIGHT HAVE SAID THAT.

09:59:39 6   Q.   RIGHT.   AND YOU DON'T DISAGREE WITH THAT; RIGHT?

09:59:44 7   A.   I DON'T GIVE AN OPINION ONE WAY OR THE OTHER IN MY REPORT,

09:59:49 8   SIR.

09:59:49 9   Q.   I'M NOT ASKING YOU WHETHER YOU GAVE AN OPINION IN YOUR

09:59:52 10   REPORT, I'M JUST ASKING WHETHER YOU AGREE WITH THAT.   IT MAKES

09:59:55 11   SENSE; RIGHT?

09:59:56 12   A.   I MEAN, SO ARISTA IS EXTENSIBLE, ARISTA COULD TAKE AND

10:00:00 13   IMPLEMENT COMMANDS TO CREATE NEW FEATURES IF -- IF THERE'S NOT

10:00:06 14   A HARDWARE FEATURE IN THE DEVICE, I DON'T THINK YOU WANT TO

10:00:10 15   TAKE COMMANDS THAT DESCRIBE A FEATURE THAT'S NOT PRESENT.

10:00:12 16   Q.   YEAH, THAT'S WHAT I'M SAYING.

10:00:14 17   AND YOU KNOW, WHAT YOU ARE SAYING IS THAT IF ARISTA ADDED

10:00:17 18   MORE FEATURES, THEY MAY WANT TO TAKE MORE COMMANDS; RIGHT?

10:00:21 19   A.   OR INVENT THEM ON THEIR OWN DEPENDING UPON THE OUTCOME OF

10:00:25 20   THE LAWSUIT.

10:00:25 21   Q.   RIGHT.   WE KNOW THEY DIDN'T INVENT THEM ON THEIR OWN;

10:00:28 22   RIGHT, WE KNOW THEY TOOK THEM?

10:00:29 23   A.   IT SAID THE MAJORITY OF THE COMMANDS THEY ACTUALLY DID

10:00:33 24   CREATE ON THEIR OWN.

10:00:33 25   Q.   OKAY.   THE 506 THAT ARE AT ISSUE IN THIS CASE, THEY TOOK

10:08:12 1   BY MR. NELSON:

10:08:12 2   Q.   SO I WOULD LIKE TO GO TO THE THIRD PAGE OF THIS DOCUMENT.

10:08:16 3   AND YOU WILL SEE THAT THERE'S A SECTION THERE THAT'S CALLED CLI

10:08:19 4   USABILITY?

10:08:23 5   A.   I SEE IT.

10:08:24 6   Q.   AND THE FIRST STATEMENT THERE IS, "THE SYSTEM IS A VERY

10:08:30 7   CLOSE CLONE OF THE IOS CLI. THIS IS A MAJOR PLUS FOR THE

10:08:34 8   MAJORITY OF CUSTOMERS WHO HAVE ALREADY CISCO TRAINED STAFF."

10:08:38 9   DO YOU SEE THAT?

10:08:39 10   A.   I SEE IT.

10:08:40 11   Q.   SO YOU DON'T HAVE ANY BASIS TO DISPUTE THAT THESE

10:08:47 12   STATEMENTS LIKE THESE ARE STATEMENTS THAT ARISTA WAS MAKING TO

10:08:50 13   POTENTIAL CUSTOMERS TO SELL ITS PRODUCT, CORRECT?

10:08:52 14   A.   I MEAN, I CAN VERIFY THAT I'VE READ THE WORDS YOU JUST

10:08:56 15   SPOKE, AND THIS SEEMS TO BE FROM MS. ULLAL.

10:08:59 16   Q.   THAT'S WHAT I'M -- YOU DON'T HAVE ANY BASIS TO DISPUTE

10:09:02 17   THAT; RIGHT?

10:09:04 18   A.   I MEAN, ARE YOU ASKING FOR AN OPINION ABOUT HOW I FEEL

10:09:09 19   ABOUT THIS ASSERTION, OR ARE YOU SAYING WILL I CONFIRM IT SEEMS

10:09:13 20   SHE'S SAID THIS?

10:09:14 21   Q.   I'M NOT ASKING YOU TO SPECULATE, SIR. I'M ASKING THE

10:09:17 22   OPPOSITE QUESTION, WHICH IS, YOU DON'T HAVE ANY BASIS TO

10:09:20 23   DISPUTE THE STATEMENT THAT'S MADE HERE?

10:09:22 24   A.   ONCE AGAIN, I THINK I DO. I DID AN INDEPENDENT ANALYSIS

10:09:26 25   THAT WOULD RUN COUNTER TO THE CLAIM MADE.

10:09:28 1   Q.   THE QUESTION IS, YOU DON'T HAVE ANY BASIS TO DISPUTE THAT

10:09:31 2   ARISTA MADE THESE STATEMENTS TO POTENTIAL CUSTOMERS? THAT'S

10:09:35 3   ALL I'M SAYING?

10:09:35 4   A.   THERE, I AGREE.

10:09:36 5   Q.   OKAY. NOW LET'S TALK A LITTLE BIT, I WANT TO GO BACK,

10:09:46 6   THERE WAS A QUESTION I WANTED TO ASK YOU ABOUT ORIGINALITY AS

10:09:49 7   WELL.

10:09:52 8   SO YOU WERE HERE, I THINK WE'VE ALREADY ESTABLISHED, FOR

10:09:55 9   DR. LI'S TESTIMONY, CORRECT?

10:09:57 10   A.   I WAS.

10:09:58 11   Q.   AND HE TALKED ABOUT SOME OF THE EARLY WORK ON THE CREATION

10:10:01 12   OF JUNOS; RIGHT?

10:10:03 13   A.   YES.

10:10:05 14   Q.   OKAY. AND ONE OF THE THINGS HE SAID IS THEY TRIED TO USE

10:10:09 15   INDUSTRY STANDARD TERMS WHERE THEY COULD; RIGHT?

10:10:12 16   A.   I BELIEVE HE SAID THAT.

10:10:13 17   Q.   YET, HE ALSO SAID THAT THEY CAME UP WITH A COMPLETELY

10:10:17 18   DIFFERENT CLI FROM THE CISCO CLI; RIGHT?

10:10:22 19   A.   THERE ARE SIMILARITIES, THERE ARE DIFFERENCES. I DON'T

10:10:26 20   KNOW IF HE SAID THE WORDS COMPLETELY DIFFERENT, BUT --

10:10:29 21   Q.   VERY DIFFERENT, SUBSTANTIAL DIFFERENCES, CORRECT?

10:10:31 22   A.   I DON'T REMEMBER HIS WORDS.

10:10:32 23   Q.   YOU DON'T RECALL? BUT YOU DON'T HAVE ANY BASIS TO DISPUTE

10:10:36 24   HIS TESTIMONY; RIGHT?

10:10:37 25   A.   I DON'T DISPUTE ANYTHING HE SAID.

10:59:34 1   Q.   I WOULD LIKE TO CLARIFY A FEW THINGS, DR. BLACK. IF WE

10:59:40 2   COULD CALL UP EXHIBIT 9041 WHILE WE ARE ON THAT SUBJECT.

10:59:58 3   AND WHY DON'T WE SCROLL SEVERAL PAGES DOWN TO, SAY, AROUND

11:00:04 4   LINE 400 OR THEREABOUTS.

11:00:21 5   SO DR. BLACK, I GUESS THE THING I WOULD LIKE TO UNDERSTAND

11:00:24 6   IS, WE SEE HERE, FOR EXAMPLE, A NUMBER OF COMMANDS FOR WHICH

11:00:29 7   YOU FOUND USE IN THE 1 AND 2 VENDOR RANGE; RIGHT?

11:00:34 8   A.   YES.

11:00:34 9   Q.   OKAY. IF A COMPANY, FOR EXAMPLE AT LINE 409, THERE'S A

11:00:44 10   COMMAND VRRP AUTHENTICATION; DO YOU SEE THAT?

11:00:48 11   A.   I DO.

11:00:48 12   Q.   AND ARE YOU FAMILIAR WITH THE VRRP PROTOCOL?

11:00:56 13   A.   VIRTUAL ROUTER REDUNDANCY PROTOCOL.

11:01:01 14   Q.   ALL RIGHT. AND I SEE A NUMBER OF COMMANDS IN THAT

11:01:05 15   VICINITY, 410, 411; DO YOU SEE THAT?

11:01:06 16   A.   I DO.

11:01:07 17   Q.   WOULD YOU EXPECT THAT A NETWORKING VENDOR WHO DIDN'T

11:01:11 18   IMPLEMENT THE VRRP PROTOCOL TO HAVE A COMMAND IN THEIR MANUAL

11:01:15 19   FOR VRRP?

11:01:17 20   A.   NO, IT WOULDN'T MAKE SENSE IF THEY DON'T SUPPORT THE

11:01:20 21   PROTOCOL, THEY WOULDN'T HAVE THE COMMAND.

11:01:22 22   Q.   AND WOULD THAT GO FOR OTHER PROTOCOLS, PROTOCOL FEATURES

11:01:29 23   THAT ARE AMONG THE COMMANDS THAT CISCO CHOSE TO ASSERT HERE?

11:01:34 24   FOR EXAMPLE, IF A VENDOR DIDN'T IMPLEMENT THE PTP PROTOCOL,

11:01:40 25   WOULD YOU EXPECT THAT THEY WOULD HAVE PTP COMMANDS IN THEIR

11:01:43 1   MANUAL?

11:01:44 2   A.   I WOULDN'T EXPECT THEY WOULD.

11:01:45 3   Q.   AND DOES EVERY NETWORKING COMPANY IMPLEMENT EVERY INDUSTRY

11:01:52 4   STANDARD PROTOCOL THAT EXISTS?

11:01:55 5   A.   NO, THEY DON'T.

11:01:56 6   Q.   WHY IS THAT?

11:01:58 7   A.   I MEAN, IT'S THEIR CALL. I MEAN, IF SOMEBODY WANTS TO

11:02:02 8   OFFER SOME OF THE MORE HIGH END FEATURES, THEY CHOOSE TO IN

11:02:06 9   THEIR HIGH END PRODUCTS, USUALLY, MAYBE A LOWER END CHEAPER

11:02:12 10   INEXPENSIVE PRODUCT, THEY MIGHT NOT IMPLEMENT EVERYTHING.

11:02:14 11   Q.   NOW YOU PROVIDED YOUR ANALYSIS OF THE USAGE OF COMMANDS BY

11:02:22 12   DIFFERENT VENDORS EARLIER IN THIS CASE, SOME SIX MONTHS AGO OR

11:02:26 13   SO; RIGHT?

11:02:27 14   A.   AROUND JUNE, YES.

11:02:28 15   Q.   AND YOU UNDERSTAND DR. ALMEROTH HAD A CHANCE TO RESPOND TO

11:02:30 16   THAT; RIGHT?

11:02:31 17   A.   YES.

11:02:33 18   Q.   AND DID HE EVER CONDUCT ANY SORT OF ANALYSIS THAT LOOKED

11:02:36 19   AT WHAT OTHER VENDORS IMPLEMENTED AND TRIED TO FIND OTHER

11:02:43 20   VENDORS THAT CAME UP WITH DIFFERENT COMMANDS FOR THE SAME

11:02:46 21   FEATURE; DID HE EVER PROVIDE THAT TO YOU?

11:02:48 22   A.   NOT THAT I'VE SEEN, NO.

11:02:57 23   Q.   OF THE COMPANIES YOU DID LOOK AT, I WANT TO ASK YOU SOME

11:03:00 24   QUESTIONS ABOUT THAT.

11:03:01 25   BROCADE, THAT WAS ONE OF THEM; RIGHT?

11:07:10 1   Q.   ALL RIGHT. SO THE EXTENSIBILITY THAT'S REFERRED TO IN THE

11:07:14 2   PARSER-POLICE MANIFESTO, IS THAT THE SAME THING AS THE

11:07:18 3   EXTENSIBILITY THAT ARISTA TALKS ABOUT WITH ITS OPERATING

11:07:22 4   SYSTEM?

11:07:22 5   A.   NO, THEY ARE DIFFERENT CONCEPTS.

11:07:24 6   Q.   CAN YOU EXPLAIN THE DIFFERENCE?

11:07:26 7   A.   SURE.

11:07:27 8   SO IN THE PARSER-POLICE MANIFESTO, WHEN IT SAYS THINK

11:07:31 9   EXTENSIBLE, THEY MEAN WHEN YOU PUT IN A HARD-CODED CHANGE TO

11:07:35 10   THE PARSER, THINK ABOUT WHAT OTHER HARD-CODED CHANGES YOU MIGHT

11:07:39 11   WANT TO PROVIDE LATER AS A CISCO ENGINEER.

11:07:43 12   WHEN ARISTA TALKS ABOUT EXTENSIBILITY, THEY ARE TALKING

11:07:46 13   ABOUT WHAT THEY PROVIDE TO THEIR CUSTOMERS SO THAT THEIR

11:07:50 14   CUSTOMERS WILL EXTEND THE PRODUCT.

11:07:51 15   Q.   ALL RIGHT. AND ONE LAST AREA.

11:07:58 16   MR. NELSON ASKED YOU SOME QUESTIONS ABOUT EOS COMMANDS AND

11:08:01 17   HOW MUCH OVERLAP THERE IS. AND I THINK YOU SAID THAT THE

11:08:06 18   MAJORITY OF EOS COMMANDS ARE DIFFERENT THAN CISCO'S; DO YOU

11:08:10 19   REMEMBER THAT TESTIMONY?

11:08:11 20   A.   I DO.

11:08:11 21   Q.   CAN YOU TELL ME WHAT YOU MEANT BY THAT?

11:08:13 22   A.   WELL, I THINK I SAID YESTERDAY THAT THERE ARE THESE 506,

11:08:18 23   AND WE LOOKED AT HOW THERE'S A LOT MORE THAN MEETS THE EYE WHEN

11:08:23 24   YOU JUST LOOK AT THE LIST. PLUS, ARISTA HAS A WHOLE BUNCH OF

11:08:26 25   FEATURES THAT THEY'VE ADDED TO THEIR PRODUCT THAT REQUIRE NEW

11:08:32   1   CLI COMMANDS, THOUSANDS OF THOSE. THEY DON'T LOOK LIKE

11:08:36   2   ANYTHING I'VE SEEN IN CISCO.

11:08:37   3   Q.   DO YOU HAVE AN UNDERSTANDING OR DID YOU GET ANY

11:08:41   4   INFORMATION ABOUT HOW MANY EOS COMMANDS, ARISTA EOS COMMANDS,

11:08:45   5   THERE ARE IN TOTAL?

11:08:45   6   A.   I THINK ARISTA HAS SAID 8,000, THAT NEIGHBORHOOD.

11:08:51   7   Q.   OKAY. LASTLY, DID YOU EVER LOOK AT THE SUM TOTAL OF IOS

11:09:03   8   COMMANDS TO ATTEMPT TO DETERMINE HOW MANY OF THOSE COMMANDS ARE

11:09:10   9   RELEVANT OR POTENTIALLY RELEVANT TO THE PRODUCTS THAT ARISTA

11:09:14   10   SELLS, UNDERSTANDING THAT THEY ARE ALWAYS JUST ADDED TO,

11:09:19   11   NOTHING IS EVER PULLED OUT?

11:09:21   12   A.   RIGHT. YES, I DID.

11:09:22   13   Q.   AND WHAT DID YOU FIND THERE?

11:09:24   14   A.   WELL, I MEAN, WE SAW A SLIDE THAT SAID 16K WAS THEIR

11:09:28   15   ESTIMATE. THAT WAS IN THEIR COMMAND DATABASE, I DON'T THINK

11:09:34   16   THAT'S PUBLIC ANYWHERE. BUT CISCO PUBLISHES THIS THING, THEY

11:09:37   17   CALL IT A MASTER COMMAND REFERENCE, AND THERE ARE ABOUT 18,000

11:09:41   18   COMMANDS LISTED IN THAT, WHICH DOESN'T SURPRISE ME SINCE IT'S

11:09:44   19   PROBABLY MORE RECENT THAN THE SLIDE WE SAW.

11:09:47   20   AND I DID, I SPENT ABOUT THREE EVENINGS LAST WEEK, AND I

11:09:52   21   LOOKED DOWN AND I --

11:09:53   22   MR. NELSON: OBJECTION, YOUR HONOR. MOVE TO STRIKE.

11:09:54   23   THIS IS BEYOND THE SCOPE OF HIS REPORT.

11:09:57   24   MR. FERRALL: YOUR HONOR, IT'S RESPONSIVE TO THE

11:09:58   25   CROSS-EXAMINATION THAT MR. NELSON OPENED UP.

11:19:40   1   THE COURT: AND IT WILL BE ADMITTED.

11:19:42   2   (DEFENDANT'S EXHIBIT 5119 WAS ADMITTED INTO EVIDENCE.)

11:19:42   3   MR. VAN NEST: TX 5119.

11:19:47   4   THE NEXT DEPOSITION IS A LITTLE BIT LONGER. THIS IS THE

11:19:53   5   DEPOSITION OF DOUG GOURLAY. IT'S A LITTLE LONGER, IT'S

11:19:56   6   29 MINUTES.

11:19:57   7   18 MINUTES OF THAT SHOULD BE ASSESSED TO ARISTA AND

11:20:00   8   11 MINUTES TO CISCO.

11:20:15   9   **(THE VIDEO DEPOSITION OF DOUGLAS GOURLAY WAS PLAYED INTO**

11:50:01 10   **THE RECORD.)**

11:50:01 11   MR. VAN NEST: YOUR HONOR, THAT CONCLUDES

11:50:03 12   MR. GOURLAY'S DEPOSITION.

11:50:05 13   I HAVE A 15-MINUTE -- ONE LAST VIDEO THIS MORNING, OR I

11:50:10 14   HAVE A FIVE-MINUTE READING OF AN INTERROGATORY. AND I COULD DO

11:50:14 15   EITHER ONE, WHATEVER YOUR HONOR --

11:50:16 16   THE COURT: I AM THINKING WE WILL PUSH THROUGH AND DO

11:50:19 17   THE 15-MINUTE TAPE, SINCE WE ARE DOING THOSE.

11:50:23 18   MR. PAK: WE MAY HAVE SOME EXHIBITS TO MOVE IN, BASED

11:50:26 19   ON MR. GOURLAY'S VIDEO TESTIMONY.

11:50:29 20   MR. VAN NEST: LET'S PASS THAT.

11:50:30 21   MY SHEET SAID THERE WEREN'T ANY, BUT IF YOU WANT TO MOVE

11:50:35 22   THEM IN, YOU CAN. WE WILL CONFER OVER THE LUNCH HOUR.

11:50:43 23   THIS NEXT WITNESS IS DEEPAK MALIK. THIS IS A -- JUST

11:50:49 24   OVER -- IT'S ABOUT A 15-MINUTE SEGMENT, YOUR HONOR.

11:50:51 25   TEN MINUTES SHOULD BE ATTRIBUTED TO ARISTA, AND FIVE TO

02:31:16   1   THAT?

02:31:17   2   A.   YES.

02:31:17   3   Q.   OKAY. BUT THERE IS NO FORMAL INDUSTRY STANDARD

02:31:22   4   ORGANIZATION, TO YOUR KNOWLEDGE, THAT RATIFIES SPECIFICATIONS

02:31:26   5   FOR A CLI USER INTERFACE FOR NETWORKING EQUIPMENT, CORRECT?

02:31:30   6   A.   CORRECT.

02:31:30   7   Q.   SO WHEN YOU ARE USING THE LABEL INDUSTRY STANDARD CLI IN

02:31:35   8   YOUR MARKETING DOCUMENTS, YOU ARE NOT TALKING ABOUT AN INDUSTRY

02:31:40   9   STANDARD THAT'S BEEN RATIFIED BY AN INDUSTRY STANDARD SETTING

02:31:43 10   ORGANIZATION, CORRECT?

02:31:44 11   A.   CORRECT.

02:31:45 12   Q.   IN FACT, I THINK YOU'VE DESCRIBED THAT AS A GENERAL WAY TO

02:31:53 13   DESCRIBE THE TYPE OF CLI THAT HP USES; IS THAT FAIR?

02:31:56 14   A.   CORRECT. OVER TIME, THE INDUSTRY HAS EVOLVED TO USE A SET

02:32:01 15   OF COMMON WAYS TO ADDRESS AND CONFIGURE ROUTERS, AND THAT IS

02:32:04 16   THE INDUSTRY STANDARD.

02:32:07 17   Q.   BUT YOU ARE NOT OFFERING ANY OPINIONS TODAY ABOUT WHETHER

02:32:13 18   THE CLI COMMANDS AT ISSUE HAD BEEN SUBJECT TO A RATIFICATION

02:32:17 19   PROCESS BY AN INDUSTRY STANDARD ORGANIZATION, THAT'S NOT WHAT

02:32:20 20   YOU ARE TESTIFYING ABOUT TODAY, CORRECT?

02:32:21 21   A.   CORRECT.

02:32:22 22   Q.   AND SIR, YOU WOULD AGREE WITH ME THAT THERE ARE MULTIPLE

02:32:25 23   WAYS TO IMPLEMENT A SPECIFIC CLI COMMAND, CORRECT?

02:32:29 24   A.   YES, THERE ARE MULTIPLE WAYS.

02:32:31 25   Q.   AND DIFFERENT COMPANIES CAN AND DO, IN FACT, CREATE THEIR

02:40:48 1   Q.   SHOW TECH, DISPLAY DIAGNOSTIC INFORMATION?

02:40:53 2   A.   YES.

02:40:55 3   Q.   ISN'T IT TRUE, SIR, THAT DIFFERENT ENGINEERS, EVEN IN THE

02:40:58 4   SAME COMPANY, CAN MAKE THEIR OWN CHOICES ABOUT HOW TO CREATE

02:41:05 5   THEIR OWN CLI COMMANDS AND SYNTAX FOR THE SAME FUNCTIONALITY,

02:41:08 6   AND WE CAN SEE IT IN THESE TWO PRODUCT LINES FROM HP, CORRECT?

02:41:13 7   A.   THE DESIGNERS OF THE CLI HAVE SOME COMMON DESIGN

02:41:21 8   PRINCIPLES THAT THEY USE TO STRUCTURE THE CLI WITH VARIATIONS

02:41:30 9   IN SYNTAX.

02:41:30 10   AND SO THEY TRY TO STAY CONSISTENT IN THE USAGE OF

02:41:34 11   TERMINOLOGY IN THE CONSTRUCTION OF CLI, AND DIFFERENT

02:41:40 12   COMPANIES, DIFFERENT DESIGNERS DEVELOP THE CLI DIFFERENTLY,

02:41:45 13   NAME THE COMMANDS DIFFERENTLY. IN THIS CASE, COMWARE WAS

02:41:48 14   ACQUIRED BY HP, AND DIFFERENT DESIGN GROUPS DESIGN THOSE

02:41:54 15   SYNTAX.

02:41:54 16   Q.   AND HP SELLS COMWARE PRODUCTS TODAY, CORRECT?

02:41:58 17   A.   THAT'S RIGHT.

02:41:59 18   Q.   SO WHAT I'M GETTING AT IS, ALTHOUGH SOME OF THE TERMS

02:42:02 19   MIGHT BE THE SAME, DIFFERENT DESIGNERS, EVEN AT THE SAME

02:42:06 20   COMPANY, CAN CHOOSE DIFFERENT WORDS, DIFFERENT HIERARCHIES,

02:42:09 21   DIFFERENT SYNTAX FOR THE SAME FUNCTIONS; ISN'T THAT TRUE, SIR?

02:42:12 22   A.   THAT'S TRUE.

02:42:13 23   Q.   OKAY.

02:42:14 24   MR. PAK: I HAVE NO MORE QUESTIONS, YOUR HONOR.

02:42:17 25   THE COURT: REDIRECT, MS. MCCLOSKEY?

UNITED STATES COURT REPORTERS

Appx12324

02:44:14   1   VERSUS "WRITE."

02:44:18   2   THE INTENDED BEHAVIOR BY THE ROUTERS AND SWITCHES ARE THE

02:44:23   3   SAME. AND SO THOSE CLASS OF COMMANDS, THOSE CLASS OF INTENDED

02:44:30   4   BEHAVIOR ON THE SWITCHES AND ROUTERS ARE THE SAME.

02:44:33   5   THE SYNTAX MAY VARY, BUT WHAT YOU EXPECT THE ROUTER AND

02:44:37   6   THE SWITCH TO DO IS QUITE CONSISTENT.

02:44:41   7   Q.   THANK YOU.

02:44:41   8   A.   AND THOSE ARE THE COMMON THINGS.

02:44:43   9   MS. MCCLOSKEY: THANK YOU.

02:44:45   10   MR. PAK: NO MORE QUESTIONS, YOUR HONOR.

02:44:47   11   THE COURT: THANK YOU.

02:44:47   12   MR. VENKATRAMAN, YOU ARE FREE TO GO. THANK YOU FOR YOUR

02:44:50   13   TESTIMONY.

02:44:51   14   THE WITNESS: THANK YOU.

02:44:57   15   MR. VAN NEST: YOUR HONOR, WE HAVE ONE MORE SHORT

02:45:00   16   VIDEO WITNESS --

02:45:02   17   THE COURT: OKAY.

02:45:02   18   MR. VAN NEST: -- WHO IS GOING TO APPEAR.

02:45:04   19   HIS NAME GAVIN CATO, C-A-T-O. THIS IS A 16-MINUTE VIDEO,

02:45:14   20   OF WHICH NINE MINUTES WILL BE ATTRIBUTED TO ARISTA AND SEVEN

02:45:18   21   MINUTES TO CISCO.

02:45:18   22   **(THE VIDEO DEPOSITION OF GAVIN CATO WAS PLAYED INTO THE**

03:03:10   23   **RECORD.)**

03:03:10   24   MR. VAN NEST: YOUR HONOR, THAT CONCLUDES THE

03:03:11   25   TESTIMONY OF MR. CATO'S.

08:21:46   1   IN THE UNITED STATES DISTRICT COURT

 2   FOR THE NORTHERN DISTRICT OF CALIFORNIA

 3   SAN JOSE DIVISION

 4

 5

CISCO SYSTEMS, INC.,   )   CV-14-5344-BLF

 6   )

                   PLAINTIFF,   )   SAN JOSE, CALIFORNIA

 7   )

            VS.   )   DECEMBER 9, 2016

 8   )

ARISTA NETWORKS, INC.,   )   VOLUME 12

 9   )

                   DEFENDANT   )   PAGES 2418-2655

10   _____   )

11   TRANSCRIPT OF PROCEEDINGS
            BEFORE THE HONORABLE BETH LABSON FREEMAN
12   UNITED STATES DISTRICT JUDGE

13   A P P E A R A N C E S:

14   FOR THE PLAINTIFF: QUINN, EMANUEL, URQUHART & SULLIVAN
                              BY: DAVID A. NELSON
15   500 WEST MADISON STREET, SUITE 2450
                              CHICAGO, IL 60661
16

17   FOR THE PLAINTIFF: QUINN, EMANUEL, URQUHART & SULLIVAN
                              BY: SEAN PAK
18   50 CALIFORNIA STREET, 22ND FLOOR
                              SAN FRANCISCO, CALIFORNIA 94111
19

20

21

22   APPEARANCES CONTINUED ON NEXT PAGE

23   OFFICIAL COURT REPORTER: SUMMER FISHER, CSR, CRR
                                   CERTIFICATE NUMBER 13185
24

25   PROCEEDINGS RECORDED BY MECHANICAL STENOGRAPHY
                TRANSCRIPT PRODUCED WITH COMPUTER

1   APPEARANCES (CONTINUED)

2   FOR THE DEFENDANT: KEKER & VAN NEST, LLP
                               BY: ROBERT ADDY VAN NEST
3   BRIAN FERRALL
                                     DAVID J. SILBERT
4   ELIZABETH K. MCCLOSKEY
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10:14:51 1   MR. DAHM, FROM MR. SADANA'S DEMONSTRATIVES.

10:14:54 2   Q.   MR. SADANA, IF YOU COULD USE THIS TO HELP EXPLAIN THE

10:14:58 3   CHALLENGE OF PERFORMING THAT CLOUD NETWORKING FUNCTION IN A

10:15:04 4   TRADITIONAL NETWORKING ENVIRONMENT.

10:15:07 5   A.   ABSOLUTELY.

10:15:09 6   IN THIS DIAGRAM, EACH OF THE SMALL BLOCKS AT THE BOTTOM IS

10:15:16 7   A GROUP OF ABOUT 500 SERVERS. SO IN TRADITIONAL NETWORKING,

10:15:19 8   YOU WOULD CONNECT THESE 500 NETWORKING SERVERS WITH JUST ONE

10:15:23 9   MORE LAYER OF SWITCHES TO AGGREGATE THEM TOGETHER.

10:15:31 10   BUT AS YOU SCALE OUT THE CLUSTER, YOU TAKE A BLOCK OF 500

10:15:35 11   SERVERS AND ANOTHER 500, YOU CONNECT IT TOGETHER WITH ONE MORE

10:15:38 12   LAYER OF SWITCHES, WHICH IS THE SECOND LAYER OF SWITCHES OVER

10:15:41 13   HERE ON NUMBER TWO.

10:15:42 14   THEN YOU TAKE THESE THOUSAND SERVERS AND ANOTHER THOUSAND

10:15:44 15   SERVERS AND CONNECT THEM TOGETHER WITH ONE MORE LAYER OF

10:15:48 16   SWITCHES, WHICH IS THE LAYER NUMBER THREE.

10:15:50 17   THEN YOU TAKE 2000 SERVERS AND ANOTHER THOUSAND AND

10:15:55 18   CONNECT THEM TOGETHER WITH A FOURTH LAYER OF SWITCHES.

10:15:57 19   AND THIS RESULTS WITH A LARGE VERY EXPENSIVE HIERARCHICAL

10:16:00 20   NETWORK. AND WITH CLOUD NETWORKING, WE CAN FLATTEN ALL OF THIS

10:16:04 21   BY COLLAPSING THESE LAYERS INTO JUST TWO LAYERS OF SWITCHES,

10:16:07 22   THE TOP OF RACK AND THE SPINE, THAT ALLOWS YOU TO SIGNIFICANTLY

10:16:10 23   LOWER YOUR COST, BUT IT ALSO GIVES YOU THE PERFORMANCE TO

10:16:14 24   INTERCONNECT ALL YOUR SERVERS TOGETHER TO SERVE THESE

10:16:17 25   APPLICATIONS.

10:16:18 1   Q.   OKAY. I WOULD LIKE TO GO BACK TO THE -- WELL, IF YOU

10:16:23 2   COULD LOOK AT EXHIBIT 8197 IN YOUR BINDER, MR. SADANA.

10:16:30 3   A.   SURE.

10:16:30 4   Q.   WHAT IS THAT?

10:16:31 5   A.   THIS IS NETWORK DESIGN I HAVE DONE FOR MICROSOFT AZURE IN

10:16:37 6   THE 2009 TIMEFRAME.

10:16:40 7   MR. FERRALL: YOUR HONOR, I WOULD MOVE 8197 IN

10:16:43 8   EVIDENCE.

10:16:43 9   THE COURT: ANY OBJECTION?

10:16:44 10   MR. NELSON: I DON'T KNOW WHO DREW IT.

10:16:47 11   MR. FERRALL: MR. SADANA, WHO DREW 8197?

10:16:50 12   THE WITNESS: I DREW THIS MYSELF.

10:16:53 13   MR. NELSON: IT'S OKAY, YOUR HONOR.

10:16:54 14   THE COURT: ALL RIGHT. IT WILL BE ADMITTED.

10:16:56 15   (DEFENDANT'S EXHIBIT 8197 WAS ADMITTED INTO EVIDENCE.)

10:16:56 16   BY MR. FERRALL:

10:17:01 17   Q.   SO THIS IS A LITTLE BIT LOW TECH FOR A HIGH-TECH ISSUE,

10:17:05 18   BUT CAN YOU TELL ME, MR. SADANA, WHAT YOU DREW HERE IN 2009 FOR

10:17:12 19   MICROSOFT.

10:17:12 20   A.   IN 2009, MICROSOFT WAS LOOKING FOR A DESIGN TO

10:17:17 21   INTERCONNECT 4,000 COMPUTER SERVERS ON THE LEFT SIDE, YOU SEE

10:17:21 22   THAT AT THE BOTTOM, AND 500 STORAGE NODES, STORAGE SERVERS,

10:17:27 23   TOGETHER IN ONE LARGE CLUSTER.

10:17:30 24   THIS ALLOWED THEM TO FORM MICROSOFT AZURE WHICH IS WHERE

10:17:33 25   MANY COMPANIES NOW STORED THEIR FILES.

10:17:35   1   Q.   AND LET ME ASK YOU TO EXPLAIN THAT BECAUSE WE ALL KNOW

10:17:39   2   MICROSOFT. BUT EXPLAIN, AGAIN, WHAT'S MICROSOFT AZURE?

10:17:44   3   A.   SURE.

10:17:46   4   MICROSOFT IS A FAIRLY LARGE COMPANY, AND FOR DECADES THEY

10:17:49   5   WERE SELLING WINDOWS AND RELATED SOFTWARE. BUT STARTING IN THE

10:17:55   6   2008/2009 TIMEFRAME, THEY STARTED A CLOUD GROUP CALLED AZURE.

10:17:59   7   AND WHAT THAT APPLICATION OR GROUP DOES IS THEY BUILD

10:18:02   8   LARGE DATA CENTERS AND THEY HOST THE APPLICATIONS FROM MANY

10:18:08   9   ENTERPRISES, HUNDREDS OF THOUSANDS OF COMPANIES STORING THEIR

10:18:11   10 DATA IN THE CLOUD AS WELL AS RUNNING THEIR APPLICATIONS IN THE

10:18:16   11 CLOUD.

10:18:16   12   SO MICROSOFT IS A VERY BIG PLAYER IN THIS CLOUD SPACE, IN

10:18:19   13 THE CLOUD COMPUTING SPACE. THAT'S WHAT AZURE DOES.

10:18:23   14 Q.   OKAY. SO IN 2009, YOU DREW THIS FOR MICROSOFT. AND WHAT

10:18:29   15 WAS THE POINT OF WHAT ARISTA HAD TO BRING TO MICROSOFT THAT YOU

10:18:32   16 THOUGHT WAS DIFFERENT?

10:18:33   17 A.   THE COMPETITORS WERE OFFERING SIMILAR DESIGNS WITH SEVERAL

10:18:39   18 LAYERS IN THE NETWORK. ARISTA HAD THE LEAF SWITCHES AND THE

10:18:45   19 7500, WHICH YOU HAVE SEEN THE SPINE, THE FOUR BOXES IN THE

10:18:48   20 MIDDLE, THOSE WERE, AT THAT TIME, THE HIGHEST DENSITY SWITCHES

10:18:52   21 IN THE WORLD. THAT ALLOWED US TO BRING THIS NETWORK TO

10:18:56   22 MICROSOFT WHICH GAVE THEM COST SAVING AND A LOT OF POWER

10:19:01   23 SAVINGS, GIVEN THE LESSER EQUIPMENT THEY HAD TO USE.

10:19:03   24 Q.   WHO WAS THE COMPETITION FOR THIS DEAL?

10:19:08   25 A.   THE COMPETITION WAS PRIMARILY CISCO, CISCO WAS THE

10:19:12   1   INCUMBENT AT THE MICROSOFT AT THAT TIME, BUT DELL AND HP WERE

10:19:17   2   TRYING AS WELL, BUT THEY DID NOT HAVE SIGNIFICANT PRODUCTS AT

10:19:22   3   THAT TIME.

10:19:22   4   Q.   AND WERE YOU ABLE TO WIN THIS DEAL IN 2009?

10:19:24   5   A.   YES, WE WERE ABLE TO WIN THIS DEAL. THIS FIRST PROJECT

10:19:28   6   BECAME THE FOUNDATION OF OUR SUCCESS WITHIN MICROSOFT.

10:19:32   7   Q.   AND CAN YOU SUMMARIZE, MR. SADANA, WHAT POINTS DID YOU

10:19:36   8   DRIVE HOME TO MICROSOFT ABOUT WHY ARISTA WOULD BE -- SHOULD BE

10:19:43   9   THE SWITCH OF CHOICE FOR THIS NEW DATA CENTER AZURE WAS

10:19:48   10   BUILDING?

10:19:48   11   A.   AT THIS TIME, WE HAD 384 PORTS IN ONE SWITCH. THE

10:19:56   12   COMPETING PRODUCT FROM CISCO HAD ONLY 64 PORTS. SO WE COULD

10:19:59   13   COLLAPSE MULTIPLE LAYERS, AND IN THE END, THAT RESULTED IN A

10:20:04   14   SIGNIFICANT SAVING TO MICROSOFT.

10:20:07   15   IF I CAN SUMMARIZE IN A NUT SHELL, THE COST OF POWERING UP

10:20:12   16   THE CISCO GEAR FOR THIS DESIGN, AT THAT TIME, WAS MORE THAN THE

10:20:18   17   COST OF THE ARISTA PRODUCTS, THE COST OF POWERING THE ARISTA

10:20:22   18   PRODUCTS AND OPERATING IT FOR THREE YEARS.

10:20:25   19   SO JUST THE COST OF POWERING UP THE COMPETITOR PRODUCT WAS

10:20:28   20   SO HIGH THAT WE COULD BEAT THEM WITH THIS CONDENSED DESIGN.

10:20:32   21   Q.   DID MICROSOFT REQUIRE A CISCO-LIKE CLI FOR THIS PROJECT?

10:20:38   22   A.   NO, MICROSOFT DID NOT REQUIRE A CISCO-LIKE CLI.

10:20:42   23   Q.   DID YOU PROMOTE THE SIMILARITY OF YOUR CLI TO CISCO'S IN

10:20:49   24   ATTEMPTING TO WIN THIS DEAL?

10:20:52   25   A.   WE GENERALLY MENTION IT ON OUR SALES COLLATERAL, BUT THE

10:20:56   1   CLI WAS NOT A TOPIC OF DISCUSSION WITH MICROSOFT. THE FOCUS

10:21:00   2   WAS STORAGE IN AZURE TO BUILD THIS DESIGN.

10:21:02   3   Q.   THERE'S BEEN SOME DISCUSSION, MR. SADANA, OF THE USE OF

10:21:06   4   AUTOMATION TOOLS BY CLOUD NETWORKING COMPANIES; ARE YOU

10:21:09   5   FAMILIAR WITH THAT, GENERALLY?

10:21:10   6   A.   YES, I AM.

10:21:11   7   Q.   AND HAVE YOU BECOME FAMILIAR AS PART OF YOUR DUTIES AT

10:21:15   8   ARISTA WITH THE NATURE OF AUTOMATION THAT YOUR CUSTOMERS DO

10:21:19   9   WITH ARISTA PRODUCTS?

10:21:20   10   A.   YES, I DO.

10:21:22   11   Q.   AND IF CLOUD COMPANIES WHO USE AUTOMATION, EMBED A CLI

10:21:32   12   COMMAND IN THE AUTOMATION TOOLS, DO YOU HAVE A SENSE ABOUT

10:21:37   13   WHETHER HAVING A FAMILIAR CLI COMMAND IS IMPORTANT TO THOSE

10:21:42   14   CUSTOMERS?

10:21:43   15   A.   NO, IT'S CERTAINLY NOT. WHEN YOU EMBED A CLI COMMAND IN

10:21:49   16   AN AUTOMATION SOFTWARE, IT'S ONE COMPUTER PROGRAM TALKING TO

10:21:52   17   THE SWITCHES.

10:21:53   18   SO IT DOESN'T MATTER WHAT COMMAND YOU USE BECAUSE YOU ARE

10:21:56   19   NOT TRYING TO USE A FAMILIAR CLI WITH A HUMAN BEING. YOU COULD

10:21:59   20   HAVE ANYTHING IN THAT STRING AT THAT POINT AND THE PROGRAM WILL

10:22:03   21   STILL BE ABLE TO AUTOMATE THE NETWORK.

10:22:05   22   Q.   MR. SADANA, GOING BACK TO THE 2009 TIMEFRAME, THE JURY HAS

10:22:09   23   HEARD SOME TESTIMONY FROM YOU FROM YOUR DEPOSITION. AND AMONG

10:22:13   24   THE THINGS THEY HEARD WAS THAT IN THAT TIMEFRAME, HAD ARISTA

10:22:18   25   ADOPTED A DIFFERENT CLI, IT WOULD HAVE ONLY BEEN ABLE TO SELL

10:23:59   1   IF YOU LOOK AT OUR DATA CENTER FROM MICROSOFT OR FACEBOOK,

10:24:04   2   EACH FACILITY IS THE SIZE OF FOUR FOOTBALL FIELDS. NO HUMAN

10:24:08   3   BEING CAN PHYSICALLY GO AND CAN CONFIGURE ITS DEVICE, IT HAS TO

10:24:13   4   BE AUTOMATED.

10:24:14   5   BUT AS THESE CLOUD COMPANIES PUBLISHED THEIR WORK ON

10:24:17   6   INTERNET, ON CONFERENCES AND ON VIDEOS, NEWS SPREAD QUICKLY.

10:24:20   7   SO MANY MORE COMPANIES, TODAY, WANT TO AUTOMATE THEIR

10:24:24   8   INFRASTRUCTURES. AND THERE'S A TREND IN NETWORKING, THERE'S

10:24:27   9   BEEN A DRAMATIC CHANGE SINCE WE STARTED OUT, WHERE MORE

10:24:31   10   COMPANIES ARE AUTOMATING SOFTWARE-DEFINED NETWORKING TO CHANGE

10:24:34   11   THE WAY THEY OPERATE OR MANAGE THE NETWORK.

10:24:36   12   Q.   DOES ARISTA STILL INTERACT WITH CUSTOMERS OR POTENTIAL

10:24:41   13   CUSTOMERS WHO SEEK A CISCO-LIKE CLI?

10:24:44   14   A.   THERE ARE A FEW IN THE ENTERPRISE SPACE, EVEN TODAY.

10:24:48   15   Q.   NOW IN 2009, THERE WAS A STUDY DONE BY MR. DAVE HEYMAN AT

10:25:00   16   ARISTA REGARDING USABILITY; ARE YOU FAMILIAR WITH THAT?

10:25:03   17   A.   YES, I AM.

10:25:04   18   Q.   AND WHAT WAS THE PURPOSE OF THAT STUDY?

10:25:09   19   A.   THAT STUDY WAS DONE TO EDUCATE OUR SALES TEAM AND

10:25:15   20   CUSTOMERS THAT TRANSITIONING TO ARISTA PRODUCTS WAS NOT GOING

10:25:18   21   TO BE TOO HARD, THAT WAS GENERALLY A WAY CUSTOMERS WOULD HAVE

10:25:23   22   IF THEY WERE LOOKING AT NEW EQUIPMENT.

10:25:26   23   AND THAT USABILITY STUDY WAS DONE TO SHOW THAT IT IS

10:25:28   24   POSSIBLE, IT'S FAIRLY EASY FOR THEM TO TRANSITION TO THE ARISTA

10:25:32   25   PRODUCT.

10:30:34 1   A.   THAT'S CORRECT.

10:30:35 2   Q.   CAN YOU TELL THE JURY ABOUT A DEAL WITH FACEBOOK OF

10:30:39 3   SIGNIFICANCE?

10:30:40 4   A.   WITH FACEBOOK WE HAD A VERY LARGE, IT WAS THE END OF 2013,

10:30:46 5   EARLY 2014. AND IN MID-2013 FACEBOOK HAD ISSUED AN RFP TO

10:30:54 6   INTERCONNECT HUNDREDS OF THOUSANDS OF SERVERS TOGETHER IN A

10:30:57 7   SPECIFIC DESIGN.

10:30:58 8   Q.   AND MR. SADANA, RFP IS A REQUEST FOR PROPOSAL?

10:31:01 9   A.   THAT'S CORRECT. THIS WAS THEIR FORMAL REQUEST FOR

10:31:03 10   PROPOSAL FOR PRODUCTS AND COSTS AND TECHNICAL REQUIREMENTS.

10:31:08 11   AND WE SUBMITTED A RESPONSE AND WE CONDUCTED A POC, A

10:31:13 12   PROOF OF CONCEPT, WITH THE CUSTOMER IN THEIR LABS. AND THIS

10:31:20 13   WAS AROUND SEPTEMBER 2013. WE DID NOT DO THAT WELL.

10:31:25 14   Q.   AND TO BE CLEAR, PROOF OF CONCEPT, THAT'S WHERE YOU ARE

10:31:28 15   SORT OF TESTING AGAINST THE CUSTOMER SPECIFICATIONS?

10:31:31 16   A.   THAT'S CORRECT. AND THE CUSTOMER IS THERE TO TEST ALONG

10:31:34 17   WITH US. SO THEY ARE THERE TO TEST ALONG WITH US SO THEY CAN

10:31:34 18   VERIFY THE RESULTS ARE CORRECT.

10:31:40 19   SO SEPTEMBER 2013, WE DID NOT DO THAT WELL. BUT FACEBOOK

10:31:43 20   SAID FINE, YOU CAN COME BACK AND MAKE SOME IMPROVEMENTS, FIX

10:31:48 21   YOUR PROBLEMS AND COME BACK.

10:31:51 22   WHAT FACEBOOK WAS FOCUSED ON, WAS RECONVERGENCE OF THE

10:31:55 23   NETWORK.

10:31:55 24   Q.   CAN YOU EXPLAIN WHAT RECONVERGENCE IS? ESPECIALLY,

10:31:59 25   PERHAPS TO A FACEBOOK USER, WHAT DOES THAT MEAN?

10:32:01   1   A.   YES. AS YOU MAY KNOW, FACEBOOK GENERALLY DOESN'T GO DOWN.

10:32:08   2   IT NEEDS TO BE UP AND RUNNING 24 BY 7 BY 365.

10:32:12   3   SO WHEN YOU BUILD A DATA CENTER THAT ONE SWITCH FAILS, FOR

10:32:17   4   A SHORT WHILE, ALL THE OTHER SWITCHES HAVE TO SEND TRAFFIC TO A

10:32:20   5   DIFFERENT PATH. THEY RECALCULATE THEIR PATH. AND THAT RESULTS

10:32:25   6   IN A SMALL DISRUPTION. IT CAN TAKE SOMETIMES ONE OR

10:32:29   7   TWO SECONDS, AND FACEBOOK WILL BE DOWN FOR ONE OR TWO SECONDS.

10:32:32   8   NO ONE WANTS THAT.

10:32:33   9   SO FACEBOOK REQUIRED THAT THE NETWORK RECONVERGE, AS

10:32:38   10   QUICKLY AS POSSIBLE SO THAT THE END USER DOES NOT SEE ANY DOWN

10:32:41   11   TIME.

10:32:41   12   Q.   AND HOW DID ARISTA DO IN THE SECOND TIME?

10:32:45   13   A.   WE WORKED AROUND THE CLOCK, AND ABOUT TWO OR THREE MONTHS

10:32:50   14   AFTER THAT WE RESUBMITTED A NEW VERSION OF OUR OPERATING SYSTEM

10:32:53   15   AND WE MANAGED TO RECONVERGE SIGNIFICANTLY FASTER, AND WE WERE

10:32:59   16   MORE THAN TEN TIMES FASTER THAN OUR COMPETITION AT THAT POINT,

10:33:05   17   AS FOR FACEBOOK, AND THAT'S WHY THEY GAVE US THE AWARD.

10:33:10   18   Q.   DID THE SELECTION OF CLI COMMANDS COME UP IN THE

10:33:14   19   DISCUSSION WITH FACEBOOK FOR THAT PROJECT?

10:33:16   20   A.   NO, THE CLI WAS NOT A FOCUS OF DISCUSSION, IT WAS VERY

10:33:20   21   MUCH THE DESIGN THEY WANTED WITH THE RECONVERGENCE THAT THEY

10:33:24   22   WERE LOOKING FOR.

10:33:26   23   MR. SILBERT: I HAVE NO FURTHER QUESTIONS.

10:33:28   24   THANK YOU, MR. SADANA.

10:33:28   25   THE COURT: THIS WOULD BE A GOOD TIME FOR OUR MORNING

11:20:05 1   WANT TO USE, OR THE NAME OF THE HOST THAT I WANT TO USE OR SOME

11:20:09 2   DETAIL THAT'S BEING USED AS PART OF THE COMMAND, THOSE

11:20:13 3   PARAMETERS DON'T AFFECT THE FACT THAT YOU STILL HAVE THE

11:20:17 4   COMMAND.

11:20:17 5   IN FACT, IF YOU LOOK AT THIS EXHIBIT, IT HAS AAA

11:20:22 6   ACCOUNTING UNDER THE CISCO COMMAND, AND IT HAS AAA ACCOUNTING

11:20:26 7   UNDER THE ARISTA COMMAND.

11:20:27 8   Q.   AND SO IF WE SCROLL DOWN, GO TO THE NEXT PAGE, THERE'S

11:20:34 9   ANOTHER ONE WE SEE THERE, AAA AUTHENTICATION LOGIN AND THEN THE

11:20:40 10   ARISTA COMMAND AAA AUTHENTICATION LOGIN; DO YOU SEE THAT?

11:20:44 11   A.   YES.

11:20:44 12   Q.   SO WHEN YOU REVIEWED THIS EXHIBIT 9037, WHAT DID THAT

11:20:47 13   ACTUALLY TELL YOU ABOUT THE RELATIONSHIP BETWEEN THE CISCO CLI

11:20:54 14   COMMANDS AND THE ARISTA CLI COMMANDS?

11:20:57 15   A.   THAT THEY WERE THE SAME, THEY ARE THE SAME COMMANDS.

11:21:00 16   Q.   AND IS THAT TRUE FOR ALL OF THE 506 COMMANDS?

11:21:05 17   A.   IT IS.

11:21:08 18   Q.   NOW -- AND WHEN YOU SAY THAT THE SAME COMMANDS, DOES THAT

11:21:13 19   MEAN THEY ARE IDENTICAL?

11:21:14 20   A.   THEY ARE IDENTICAL, THAT'S CORRECT. YOU CAN LOOK THROUGH

11:21:18 21   THIS ENTIRE EXHIBIT AND YOU SEAL THOSE FIRST TWO COLUMNS PAGE

11:21:22 22   AFTER PAGE AFTER PAGE WHERE THE COMMANDS ARE IDENTICAL.

11:21:25 23   Q.   NOW I WOULD LIKE TO GO TO EXHIBIT 5, WHICH IS ALREADY IN

11:21:33 24   EVIDENCE.

11:21:34 25   MR. NELSON: AND IF WE CAN GO TO THE BATES NUMBER

12:01:09 1   A.   NOW THIS PART WAS FOCUSED ON THE MANUAL. AND THE REASON

12:01:13 2   WHY I DID THAT WAS TO EMPHASIZE WHETHER ARISTA WAS TEACHING TO

12:01:17 3   ITS CUSTOMERS WHAT IT THOUGHT WERE THE IMPORTANT COMMANDS

12:01:19 4   CONSISTENT WITH THE OTHER TESTIMONY I HAD SEEN ABOUT COPYING

12:01:23 5   THE CLI.

12:01:23 6   Q.   BUT JUST TO BE CLEAR, YOU DID HAVE ACCESS TO THE ARISTA

12:01:26 7   SWITCH; RIGHT?

12:01:27 8   A.   I DID.

12:01:28 9   Q.   AND YOU HAD -- IT WAS AVAILABLE IN OUR OFFICE?

12:01:30 10   A.   IT WAS.

12:01:31 11   Q.   YOU CAME AND TESTED IT A NUMBER OF TIMES AS YOU SAID LAST

12:01:34 12   TIME?

12:01:34 13   A.   YES, SIR.

12:01:35 14   Q.   BUT YOU NEVER USED IT TO DETERMINE HOW MANY COMMANDS IN

12:01:38 15   TOTAL IT SUPPORTED, DO I HAVE THAT RIGHT?

12:01:40 16   A.   THAT'S PARTLY CORRECT. I DIDN'T NEED TO BECAUSE THE USER

12:01:45 17   MANUAL IS DESCRIBED AS THE AUTHORITATIVE SOURCE, AND IT LISTS

12:01:50 18   THOSE COMMANDS.

12:01:50 19   Q.   NOW YOU HAVE ON THE VERY BOTTOM OF THAT EOS COLUMN, 1352.

12:01:55 20   AGAIN, THOSE ARE COMMANDS COUNTED FROM THE MANUAL; RIGHT?

12:01:58 21   A.   YES.

12:01:58 22   Q.   AND YOU HAD ACCESS TO MR. SWEENEY'S TESTIMONY IN PREPARING

12:02:04 23   YOUR REPORT; RIGHT?

12:02:05 24   A.   I DID.

12:02:05 25   Q.   AND AS A MATTER OF FACT, YOUR REPORT IS CHALK FULL OF

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12:02:09   1    QUOTES FROM PEOPLE AT ARISTA; RIGHT?

12:02:11   2    A.   IT IS.

12:02:12   3    Q.   BUT MR. SWEENEY, WHO IS THE HEAD OF SOFTWARE ENGINEERING

12:02:18   4    AT ARISTA, HE ESTIMATES THAT THERE ARE 10 TO 15,000 COMMANDS?

12:02:24   5             MR. NELSON:  OBJECTION, YOUR HONOR.

12:02:25   6             MR. VAN NEST:  IN EOS, RIGHT?

12:02:26   7             MR. NELSON:  THOSE FACTS ARE NOT IN EVIDENCE.  I

12:02:28   8    DIDN'T BRING MR. SWEENEY.

12:02:30   9             MR. VAN NEST:  THIS IS FROM THE DEPOSITION TRANSCRIPT

12:02:31   10   THAT HE REVIEWED, YOUR HONOR, AS PART OF HIS REPORT.

12:02:35   11            THE COURT:  WELL, YOU CAN SHOW IT TO HIM.

12:02:36   12            MR. VAN NEST:  I WILL.

12:02:39   13       COULD I HAVE THE SLIDE UP WITH MR. SWEENEY'S TESTIMONY.

12:02:43   14   BY MR. VAN NEST:

12:02:44   15   Q.   NOW YOU REMEMBER THAT YOU HAD ACCESS TO ALL THESE

12:02:46   16   DEPOSITIONS; RIGHT?

12:02:48   17   A.   YES, SIR.

12:02:49   18   Q.   AND YOU REVIEWED THEM?

12:02:50   19   A.   YES.

12:02:51   20   Q.   AND YOU FILLED YOUR REPORT WITH THEM?

12:02:53   21   A.   YES.

12:02:53   22   Q.   BUT THIS IS ONE THAT DIDN'T MAKE YOUR REPORT; RIGHT?

12:02:58   23   A.   I WOULD HAVE TO GO BACK AND SEE.  CERTAINLY I'M AWARE THAT

12:03:01   24   HE HAD MADE THAT STATEMENT.

12:03:04   25   Q.   AND HIS STATEMENT WAS THAT WE COUNTED RECENTLY AND THERE
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12:03:08 1   ARE BETWEEN 10 AND 15,000 COMMANDS IN EOS; RIGHT?

12:03:12 2   A.   YES, AND I CERTAINLY BELIEVE THAT'S WHAT HE THINKS AND I

12:03:15 3   THINK WHEN YOU COUNT DIFFERENT PARAMETER OPTIONS, THAT YOU CAN

12:03:19 4   ADD TO THE END OF A COMMAND OR THE IDEA OF ADDING THE WORD "NO"

12:03:23 5   TO THE BEGINNING OF A COMMAND, HE'S DOUBLE-COUNTED THOSE AND

12:03:28 6   POTENTIALLY TRIPLE-COUNTED THOSE.

12:03:30 7   SO I THINK WHEN YOU LOOK AT THE USER MANUAL AS THE SET OF

12:03:36 8   COMMANDS THAT ARE DESCRIBED AS AVAILABLE, MY NUMBERS FROM THE

12:03:40 9   MANUAL ARE THE MOST ACCURATE NUMBERS.

12:03:43 10   Q.   SO LET'S GO BACK UP TO THE CHART THAT WE HAD UP BEFORE.

12:03:46 11   SO IF THE JURY WERE TO CONCLUDE, BASED ON DR. BLACK'S TESTIMONY

12:03:50 12   OR ANY OTHER EVIDENCE, THAT THERE ARE 10,000 COMMANDS IN EOS,

12:03:55 13   YOUR PERCENTAGE NUMBER ON THE RIGHT GOES WAY DOWN FROM

12:03:58 14   37 PERCENT; RIGHT?

12:03:59 15   A.   JUST DOING THE MATH, THAT WOULD BE CORRECT.

12:04:03 16   Q.   RIGHT. JUST DOING THE MATH, THAT NUMBER WOULD BE DOWN

12:04:06 17   AROUND THREE PERCENT, 4 PERCENT; RIGHT, DR. ALMEROTH?

12:04:10 18   A.   IF THE JURY WERE TO BELIEVE THAT THERE WEREN'T 1352

12:04:14 19   COMMANDS THAT THE MANUAL DESCRIBES, THEN THAT NUMBER WOULD GO

12:04:18 20   DOWN.

12:04:18 21   Q.   AND IT WOULD GO DOWN TO ABOUT 3 PERCENT; RIGHT?

12:04:21 22   A.   WELL, THE ONLY EVIDENCE THAT WE REALLY HAVE IS TO WHAT THE

12:04:27 23   ACCURATE COMMANDS ARE, IS WHAT'S IN THE MANUAL.

12:04:32 24   I MEAN, IF THEY WERE TO BELIEVE THIS DEPOSITION TESTIMONY

12:04:35 25   IS TO BE ACCURATE, THEN THAT WOULD BE THE CALCULATION THAT YOU

03:08:11 1   SOMETIMES YOU FORGET, SOMETIMES WE MAKE A MISTAKE, BUT I

03:08:15 2 DON'T HOLD YOU TO SAYING YOU RESTED AND THEN SOMETHING IS JUST

03:08:18 3 LEFT OUT. SO YOU HAVE AN OPPORTUNITY TO DO THAT.

03:08:22 4   WE TALKED ABOUT IDENTIFYING THE EXHIBITS THAT MAKE UP THE

03:08:27 5 WORKS. AND I WOULD LIKE A COPY OF THOSE EXHIBITS EXTRACTED,

03:08:32 6 BUT I HAD ASKED THE QUESTION, AND WE MAY HAVE RESOLED THIS, BUT

03:08:36 7 WERE WE GOING TO TELL THE JURY SPECIFICALLY WHICH EXHIBITS MAKE

03:08:40 8 UP THE WORKS IN THE CASE, OR NOT?

03:08:48 9   I SAID YESTERDAY I DON'T NORMALLY CALL OUT EXHIBITS TO

03:08:51 10 THE JURY, THAT MUCH I REMEMBER. BUT IT'S CONTINUED TO NAG ME

03:08:55 11 THAT I'M TELLING THEM TO EXAMINE THE WORKS AS A WHOLE AND HOW

03:09:00 12 WILL THEY FIND THEM?

03:09:03 13   SO I NEED TO BE PERSUADED THAT I CAN EITHER LEAVE IT

03:09:06 14 ALONE OR DO SOMETHING.

03:09:07 15   MR. NELSON: I THINK YOU CAN LEAVE IT ALONE.

03:09:10 16   YOU DEFINED THEM IN THE JURY INSTRUCTION AND BOTH IN THE

03:09:13 17 PRELIMINARY INSTRUCTION. I THINK FOR ARGUMENT PURPOSES,

03:09:15 18 WHETHER MR. VAN NEST OR MYSELF, WHEN I IDENTIFY THE PARTICULAR

03:09:20 19 EXHIBITS THAT THEY SHOULD LOOK AT FOR THAT, IF THAT'S RELEVANT,

03:09:23 20 THEY CAN DO THAT.

03:09:24 21   WE HAVE THOSE THINGS IN EVIDENCE AND WE CERTAINLY CAN

03:09:27 22 IDENTIFY THOSE, AT LEAST THE KEY ONES. YOU KNOW, PART OF THE

03:09:30 23 PROBLEM IS THAT WE HAD THAT ONE EXHIBIT THAT WAS ALL THE

03:09:34 24 REGISTRATIONS AND IT'S -- I MEAN, THAT WOULD TAKE PROBABLY AN

03:09:38 25 HOUR FOR YOUR HONOR TO JUST READ ALL THOSE NUMBERS. I MEAN,

03:09:42   1   MAYBE NOT, BUT CLOSE.

03:09:44   2   SO I'M NOT SURE THAT THAT'S SOMETHING THAT WE WANT TO PUT

03:09:47   3   INTO THE JURY INSTRUCTION NOR DO I THINK THAT IT --

03:09:51   4   THE COURT: OKAY. WELL, HERE'S WHAT -- I GUESS --

03:09:54   5   I'M GOING TO BE INSTRUCTING THEM ABOUT COMPARING THE WORK. I

03:09:58   6   THINK YOU NEED TO HAVE AVAILABLE FOR ME, IF I GET A QUESTION,

03:10:02   7   WHERE WOULD WE FIND THE WORK.

03:10:04   8   MR. NELSON: YOU'VE GOT IT.

03:10:06   9   THE COURT: YOU MIGHT NEVER GET THE QUESTION, BUT I

03:10:09 10   DON'T WANT YOU COMPILING IT WHEN THE QUESTION COMES OUT.

03:10:12 11   MR. NELSON: WE CERTAINLY CAN DO THAT.

03:10:14 12   THE COURT: AND AS I SAY, I NEVER CALL OUT EXHIBITS

03:10:17 13   TO THE JURY, IT'S FOR THEM TO DETERMINE WHICH ONES ARE

03:10:21 14   IMPORTANT AND WHICH ONES AREN'T. SO I WILL STICK TO MY NORMAL

03:10:23 15   TRAINING AND NOT DO THAT, BUT THAT'S A CONCERN I HAVE. SO IF

03:10:26 16   YOU CAN AT LEAST HAVE THAT AVAILABLE, THAT WOULD BE GREAT.

03:10:29 17   AND I GUESS, YOU KNOW, WE ALWAYS HOPE THERE ARE NO

03:10:31 18   QUESTIONS, THAT EVERYTHING HAS BEEN ABUNDANTLY CLEAR FOR THE

03:10:34 19   JURY.

03:10:35 20   OKAY. THAT'S FINE. AND THEY DO HAVE THE GENERAL LIST OF

03:10:38 21   EXHIBITS, SO THAT'S HELPFUL.

03:10:39 22   ALL RIGHT. THAT'S MY ONLY HOUSEKEEPING. ANY REAL

03:10:46 23   HOUSEKEEPING BEFORE WE GO TO THE MOTIONS?

03:10:48 24   MR. FERRALL: I HAVE A VERY MINOR HOUSEKEEPING WHICH

03:10:52 25   IS, I WOULD LIKE TO MARK THOSE TWO DRAWINGS AS DEMONSTRATIVES.

03:10:54	1

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03:10:54   1              THE COURT:  SURE.  LET'S MARK THEM NEXT IN ORDER AS

03:10:57   2    DEMONSTRATIVES.

03:10:57   3              MR. FERRALL:  9082 AND 9083.

03:11:00   4              THE COURT:  OKAY.

03:11:01   5    (DEFENDANT'S 9082 AND 9083 WERE MARKED FOR IDENTIFICATION.)

03:11:02   6              MR. NELSON:  AND I THINK I HAVE SOME GOOD NEWS ON THE

03:11:05   7    MOTIONS, YOUR HONOR.

03:11:05   8        WE ARE JUST GOING TO GO AHEAD AND SUBMIT IT IN WRITING.  I

03:11:08   9    DON'T KNOW IF ARISTA IS, SO THAT WILL SAVE YOUR HONOR SOME

03:11:12  10    TIME.

03:11:12  11              THE COURT:  THAT'S GREAT.  YOU KNOW, I HAVEN'T HAD

03:11:13  12    THAT DONE BEFORE, SO THAT'S GOOD.

03:11:15  13              MR. NELSON:  DON'T EXPECT THE SHAKESPEARIAN WORK, BUT

03:11:19  14    WE WILL GET IT THERE FOR YOU.

03:11:21  15              MR. VAN NEST:  AND, I SHOULD WARN COUNSEL, AFTER

03:11:24  16    YOUR HONOR'S REMARKS, WE DECIDED WE WOULD MAKE IT ORALLY.  SO

03:11:29  17    WE ARE GOING TO DO IT ORALLY THIS AFTERNOON ON THE RECORD AND

03:11:31  18    NOT FILE A PLEADING.

03:11:33  19              MS. SULLIVAN:  YOUR HONOR, I'M SO SORRY, IN LIGHT OF

03:11:35  20    WHAT WE THOUGHT WAS GOING TO BE ARISTA'S PLAN TO FILE IT IN

03:11:39  21    WRITING AND BECAUSE IT'S BEEN A LONG WEEK TO TRY TO SPARE THE

03:11:42  22    COURT, WE HAD PLANNED TO DO OURS IN WRITING NOW.

03:11:46  23              MR. VAN NEST:  THAT'S WHAT HE JUST SAID.  THAT'S

03:11:48  24    FINE.

03:11:50  25        MS. HADLOCK AND MR. ROSEN WILL PUT OUR MOTIONS ON THE
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03:11:54	1	RECORD AND IT SHOULDN'T TAKE LONG.
03:11:55	2	THE COURT: YOU KNOW, I'M ABSOLUTELY GLAD DO IT, WE
03:11:59	3	FINISHED SO EARLY TODAY IT FEELS LIKE A HALF DAY.
03:12:03	4	AND SO I JUST WANT YOU TO HAVE THE RECORD YOU WANT, THAT'S
03:12:05	5	ALL. AND SO YOU WILL SUBMIT YOURS IN WRITING AND I WILL DEEM
03:12:08	6	IT TO BE TIMELY.
03:12:09	7	MR. NELSON: YES.
03:12:09	8	THE COURT: ALL RIGHT. THAT'S FINE.
03:12:10	9	AND MR. VAN NEST --
03:12:12	10	MR. VAN NEST: MS. HADLOCK AND MR. ROSEN ARE HERE AND
03:12:16	11	THEY WILL PROCEED WHEN YOU ARE READY.
03:12:18	12	THE COURT: AND MR. NELSON, I CUT YOU OFF.
03:12:19	13	MR. NELSON: I JUST MEANT WE ARE GOING TO DO IT,
03:12:21	14	OBVIOUSLY, WELL BEFORE IT GOES TO THE JURY, SO THAT'S NOT ANY
03:12:24	15	PROBLEM.
03:12:25	16	THE COURT: OKAY.
03:12:26	17	MR. NELSON: I DON'T KNOW IF YOU WANT US TO FILE IT
03:12:28	18	OVER THE WEEKEND OR ON MONDAY MORNING. I GUESS WHEN WE ARE
03:12:31	19	DOING IT ELECTRONICALLY, IT PROBABLY DOESN'T MATTER SO MUCH.
03:12:34	20	THE COURT: YOU KNOW, I DON'T THINK THAT'S GOING TO
03:12:36	21	BE A PROBLEM. YOU'VE MADE YOUR MOTION AND NOW IT'S A MATTER OF
03:12:40	22	FILING THE BRIEF THAT SUPPORTS IT.
03:12:42	23	MR. NELSON: THANK YOU, YOUR HONOR.
03:12:43	24	THE COURT: I WILL DEEM IT TO BE TIMELY.
03:12:45	25	MR. NELSON: THANK YOU.

03:12:45 1   THE COURT: AND YOU WILL FILE IT NO LATER THAN

03:12:47 2   MONDAY.

03:12:47 3   AND THERE WILL BE NO OBJECTION TO IT BEING FILED ON

03:12:50 4   MONDAY?

03:12:50 5   MR. VAN NEST: THAT'S RIGHT, YOUR HONOR.

03:12:51 6   THE COURT: THANK YOU. I THINK THAT SHOULD TAKE CARE

03:12:53 7   OF IT.

03:12:53 8   MR. NELSON: OKAY. THANK YOU. I APPRECIATE IT.

03:12:54 9   THE COURT: ALL RIGHT. AND MS. HADLOCK, MR. ROSEN,

03:12:57 10 WOULD YOU LIKE TO PRESENT THE DEFENSE MOTION?

03:13:12 11   MS. HADLOCK: IT WILL BE THRILLING, YOUR HONOR, I

03:13:14 12 PROMISE. AUDREY HADLOCK FOR ARISTA NETWORKS.

03:13:24 13   ARISTA MOVES FOR JUDGMENT AS A MATTER OF LAW ON ALL OF

03:13:27 14 CISCO'S CLAIMS. I WILL ADDRESS THE COPYRIGHT CLAIMS FIRST AND

03:13:30 15 MR. ROSEN WILL PRESENT THE PATENT ARGUMENTS.

03:13:34 16   THE COURT: OKAY.

03:13:35 17   MS. HADLOCK: NO REASONABLE JURY COULD RETURN A

03:13:37 18 VERDICT IN CISCO'S FAVOR ON THIS RECORD BECAUSE CISCO LACKS

03:13:41 19 SUFFICIENT EVIDENCE TO PROVE THAT ANY ASSERTED ELEMENTS OF ITS

03:13:43 20 WORKS ARE ORIGINAL, CREATIVE, PROTECTED EXPRESSION, OR THAT

03:13:50 21 ARISTA COPIED PROTECTABLE ELEMENTS OR COMPILATIONS FROM CISCO'S

03:13:53 22 WORKS, OR THAT WITH ANY COPYING AMOUNTS TO ELICIT OR ACTIONABLE

03:13:58 23 COPYING AND INFRINGEMENT.

03:13:59 24   CISCO EVEN LACKS SUFFICIENT EVIDENCE FOR THE JURY TO

03:14:01 25 COMPARE THE COMPLETE WORKS OR THE ASSERTED PROTECTABLE ELEMENTS

03:14:07 1   AT ISSUE. BECAUSE OF THESE DEFICIENCIES IN CISCO'S EVIDENCE,

03:14:10 2   ARISTA IS ENTITLED TO JUDGMENT OF NONINFRINGEMENT, AND JUDGMENT

03:14:16 3   IN ITS FAVOR ON SEVERAL AFFIRMATIVE DEFENSES.

03:14:18 4   FIRST, AUTHORSHIP.

03:14:20 5   CISCO FAILED TO PRESENT SUFFICIENT EVIDENCE TO PROVE THAT

03:14:23 6   IT AUTHORED AND OWNS THE 506 INDIVIDUAL COMMANDS AND 216 HELP

03:14:31 7   DESCRIPTIONS AND THE COMMAND OUTPUTS THAT IT ASSERTS HERE OR

03:14:34 8   ALL OF THE COMMANDS AND COMMAND OUTPUTS AND HELP DESCRIPTIONS

03:14:39 9   IN ITS WORKS THAT IT HAS NOT ASSERTED HERE.

03:14:42 10   NEXT, ORIGINAL CREATIVE EXPRESSION. A REASONABLE JURY

03:14:46 11   COULD NOT FIND ON THIS RECORD THAT ANY OF THE CLI ELEMENTS OR

03:14:50 12   COMBINATIONS OF ELEMENTS THAT CISCO ASSERTS, INCLUDING THE

03:14:55 13   ASSERTED COMPILATIONS CONTAIN THE REQUISITE SPARK OF ORIGINAL

03:14:58 14   CREATIVE EXPRESSION, SEVERABLE FROM THEIR FUNCTIONS AND IDEAS,

03:15:02 15   AND NOT DICTATED BY INDUSTRY STANDARD TERMINOLOGY AND

03:15:06 16   CONVENTIONS, CUSTOMER NEEDS, PRIOR CISCO SYSTEMS, AND

03:15:11 17   PRACTICES, CONSISTENCY, EFFICIENCY, COMMERCIAL

03:15:16 18   INTEROPERABILITY, AND/OR OTHER NONCREATIVE CONSTRAINTS.

03:15:22 19   CONSIDERED SEPARATELY OR IN COMBINATION OR AS

03:15:25 20   COMPILATIONS, CISCO'S CLI ELEMENTS ARE UN COPYRIGHTABLE AND UN

03:15:30 21   PROTECTABLE UNDER SECTION 102-A, SECTION 102-B AND THE

03:15:35 22   DOCTRINES OR DEFENSES OF MERGER AND SCÈNES À FAIRE, AS WELL AS

03:15:39 23   THE SHORT WORDS AND PHRASES DOCTRINE AND THE RULE AGAINST

03:15:43 24   GRANTING PROTECTION BASED ON AN AUTHOR'S SWEAT-OF-THE-BROW OR

03:15:47 25   THEIR EFFORT.

03:15:48 1   ON THIS RECORD, A REASONABLE JURY MUST REJECT CISCO'S

03:15:52 2   CLAIMS AND FIND IN ARISTA'S FAVOR ON ALL OF THESE ISSUES THAT

03:15:56 3   ANY USE BY ARISTA WAS NOT INFRINGEMENT OR WAS JUSTIFIED.

03:16:01 4   THE RECORD DOES NOT SUFFICIENTLY SUPPORT A FINDING OF ANY

03:16:03 5   ORIGINAL CREATIVE EXPRESSION IN THE CLI ELEMENTS SEPARABLE FROM

03:16:08 6   THEIR FUNCTION AND THE ABSTRACT IDEAS THAT THEY EXPRESS.

03:16:11 7   THE CLI ELEMENTS ASSERTED ARE ALSO UN PROTECTABLE BECAUSE

03:16:14 8   CISCO LACKS SUFFICIENT EVIDENCE THAT THEY ACTUALLY APPEAR AND

03:16:17 9   FUNCTION IN THE FORM ASSERTED IN CISCO'S OR ARISTA'S WORKS.

03:16:24 10   NO PROTECTABLE COMPILATIONS.

03:16:27 11   CISCO ALSO LACKS SUFFICIENT EVIDENCE OF ANY POTENTIALLY

03:16:30 12   PROTECTABLE COMPILATION. CISCO LACKS EVIDENCE SUFFICIENT TO

03:16:34 13   PROVE THE FULL SCOPE OR CONTENTS OF ANY LEGITIMATE COMPILATION

03:16:38 14   OR COMPILATIONS OF ALL OF ITS CLI COMMANDS, ITS OUTPUTS, ITS

03:16:45 15   HELP STRINGS OR ITS MODES AND PROMPTS.

03:16:48 16   NEXT, THERE'S NO ELICIT COPING ON THIS RECORD. CISCO HAS

03:16:52 17   NOT INTRODUCED EVIDENCE SUFFICIENT TO PROVE COPYING OF

03:16:54 18   PROTECTED MATERIAL UNDER EITHER THE EXTRINSIC OR INTRINSIC

03:16:59 19   VIRTUAL IDENTITY STANDARD THAT APPLIES TO THE JURY'S

03:17:01 20   DETERMINATION OR TO PROVE THAT ANY COPYING WAS ACTIONABLE OR

03:17:05 21   ELICIT COPYING.

03:17:07 22   HOWEVER, THE JURY VIEWS THE RECORD EVIDENCE HERE, IT CAN

03:17:10 23   ONLY CONCLUDE THAT AT MOST A SMALL FRACTION OF THE CLI AND ANY

03:17:15 24   PROTECTABLE ELEMENTS WAS COPIED AND THAT NEITHER ANY

03:17:18 25   PROTECTABLE ELEMENTS NOR THE WORKS AS A WHOLE, ARE VIRTUALLY

03:17:22 1   IDENTICAL.

03:17:23 2   CISCO LACKS SUFFICIENT EVIDENCE TO SUPPORT ANYTHING BUT

03:17:27 3   THIN COPYRIGHT PROTECTION, AND NOT EVEN THAT.

03:17:31 4   AND BASED ON THIS TRIAL RECORD, NO REASONABLE JURY COULD

03:17:34 5   FIND EITHER SUFFICIENT DIRECT EVIDENCE THAT ARISTA COPIED

03:17:38 6   ORIGINAL OR PROTECTED MATERIAL FROM ANY OF CISCO'S COPYRIGHTED

03:17:41 7   WORKS.

03:17:43 8   NEXT IS THE WORKS AS A WHOLE. YOUR HONOR ASKED A VERY

03:17:46 9   GOOD QUESTION, WHERE WILL THEY FIND THE WORKS? THEY WON'T.

03:17:51 10   FOR THE NON-MANUAL CLAIMS ON THE INTERFACES, CISCO HAS

03:17:55 11   FAILED TO PUT ITS COMPLETE WORKS AT ISSUE INTO EVIDENCE OR EVEN

03:17:59 12   TO DEFINE THEM ADEQUATELY. SO THE JURY LACKS SUFFICIENT

03:18:03 13   EVIDENCE TO MAKE THE REQUIRED COMPARISONS OF THE WORK AS A

03:18:06 14   WHOLE TO DETERMINE INFRINGEMENT.

03:18:10 15   WITHOUT SUFFICIENT EVIDENCE OF THE WORKS AS A WHOLE, THE

03:18:12 16   JURY CANNOT CONCLUDE THAT CISCO HAS SATISFIED THE EXTRINSIC AND

03:18:17 17   INTRINSIC TESTS OR THAT ANY ALLEGED COPYING IS ACTIONABLE AS

03:18:21 18   INFRINGEMENT.

03:18:21 19   THE MANUALS AND COPYRIGHT REGISTRATIONS THAT CISCO HAS PUT

03:18:25 20   INTO EVIDENCE ARE NOT ADEQUATE BECAUSE NEITHER IS EVIDENCE OF

03:18:29 21   THE ENTIRETY OF THOSE USER INTERFACES OR CISCO'S OPERATING

03:18:35 22   SYSTEMS.

03:18:35 23   THE COPYRIGHT DEPOSITS DO NOT INCLUDE THE COMPLETE SOURCE

03:18:39 24   CODE, AND THAT IS NOT IN EVIDENCE. MANUALS DO NOT INCLUDE ALL

03:18:46 25   COMMANDS IN THE INTERFACES EITHER.

03:18:49 1   LIKEWISE, CISCO ALSO HAS NOT PUT ARISTA'S COMPLETE WORKS

03:18:53 2 INTO EVIDENCE. AND THE JURY LACKS SUFFICIENT EVIDENCE TO

03:18:57 3 COMPARE THOSE WORKS OR ANY PROTECTABLE ELEMENTS IN THEM TO

03:19:03 4 CISCO'S ASSERTED WORKS.

03:19:06 5   CISCO'S INTERFACES ALSO ARE NOT SEPARATE WORKS ON THIS

03:19:10 6 RECORD. CISCO LACKS SUFFICIENT EVIDENCE TO PROVE THAT ITS USER

03:19:15 7 INTERFACES HAVE ANY SEPARATE ECONOMIC OR COPYRIGHT LIFE FROM

03:19:19 8 ITS OPERATING SYSTEMS. AND THAT IS REQUIRED UNDER

03:19:22 9 NINTH CIRCUIT LAW.

03:19:26 10   THEY ALSO LACK EVIDENCE, ANY OTHER EVIDENCE THAT THE

03:19:29 11 INTERFACES COULD BE SEPARATE COPYRIGHTED WORKS.

03:19:32 12   CISCO ALSO LACKS SUFFICIENT EVIDENCE TO PROVE THAT IN THE

03:19:35 13 FORM ASSERTED AS ABSTRACT CONCEPTS, DIVORCED FROM ANY SOURCE

03:19:40 14 CODE, AND CONSOLIDATED ACROSS MULTIPLE VERSIONS MUCH FOUR CISCO

03:19:45 15 OPERATING SYSTEMS, THEY LACK EVIDENCE THAT THESE USER

03:19:48 16 INTERFACES ARE FIXED IN ANY TANGIBLE MEDIUM OF EXPRESSION AS

03:19:51 17 ALSO REQUIRED FOR COPYRIGHT PROTECTION.

03:19:54 18   NEXT, DE MINIMUS COPYING OF THE MANUALS.

03:19:57 19   CISCO'S ACCUSED COPYING FROM -- ARISTA'S ACCUSED COPYING

03:20:05 20 FROM CISCO'S TECHNICAL MANUALS IS FOR EACH AND EVERY MANUAL

03:20:08 21 ASSERTED DE MINIMUS AND NOT ACTIONABLE INFRINGEMENT.

03:20:12 22   THE EVIDENCE IS INSUFFICIENT TO SUPPORT ANY CONTRARY

03:20:14 23 FINDING. FOR EXAMPLE, ONE, TWO, OR A FEW TINY SNIPPETS THAT

03:20:25 24 CISCO HAS ASSERTED OR COPIED FROM A TECHNICAL MANUAL HUNDREDS

03:20:32 25 OF PAGES LONG OR MORE THAN A THOUSAND PAGES LONG, THAT CANNOT

03:20:33 1   BE ACTIONABLE COPYING IF IT IS TRIVIAL.

03:20:35 2   CISCO ALSO LACKS ANY SUFFICIENT EVIDENCE, OR REALLY ANY

03:20:37 3   EVIDENCE AT ALL, FOR A JURY TO FIND THAT ANY ASSERTED SNIPPET

03:20:40 4   OR SNIPPETS FROM CISCO'S MANUALS HAVE ANY SPECIAL SIGNIFICANCE

03:20:44 5   TO THOSE WORKS AS A WHOLE.

03:20:48 6   ARISTA'S ACCUSED COPYING OF CISCO'S COMMAND-LINE

03:20:53 7   INTERFACES IS ALSO DE MINIMUS AS A MATTER OF LAW WHEN PROPERLY

03:20:57 8   COMPARED TO CISCO'S ENTIRE WORKS.

03:20:59 9   THERE IS INSUFFICIENT EVIDENCE TO SUPPORT A CONTRARY

03:21:01 10   FINDING, GIVEN THE LIMITED SCOPE OF ACCUSED COPYING AND THE

03:21:04 11   SIDE OF THE WORKS. THE EVIDENCE IS EVEN MORE DEFICIENT, TAKING

03:21:09 12   INTO ACCOUNT THE VERY LIMITED SCOPE OF PROTECTION THAT IS

03:21:11 13   AVAILABLE FOR CISCO'S WORKS.

03:21:17 14   ON ARISTA'S AFFIRMATIVE DEFENSES OF MERGER AND SCÈNES À

03:21:20 15   FAIRE, A REASONABLE JURY MUST FIND IN ARISTA'S FAVOR ON THIS

03:21:27 16   RECORD FOR THE SAME REASONS ALREADY STATED THAT MAKE CISCO'S

03:21:32 17   WORKS UNPROTECTABLE, THOSE SAME CONSTRAINTS AND LIMITATIONS

03:21:36 18   PROVE ARISTA'S DEFENSES.

03:21:42 19   AS TO FAIR USE, A REASONABLE JURY MUST FIND ON THIS RECORD

03:21:46 20   THAT ARISTA'S USE OF ANY AND ALL CISCO WORKS IS FAIR USE AS A

03:21:49 21   MATTER OF LAW, BASED ON ANY REASONABLE APPLICATION OF THE

03:21:53 22   STATUTORY FACTORS TO THIS RECORD, BOTH INDIVIDUALLY AND IN ANY

03:21:58 23   COMBINATION.

03:21:59 24   THE RECORD REQUIRES THIS RESULT BASED ON ANY COMBINATION

03:22:02 25   OF THE FOLLOWING EVIDENCE.

03:22:03   1   THE DEFECTS IN PROOF OF ORIGINAL CREATIVE EXPRESSION IN

03:22:07   2   THE ELEMENTS AND WORKS AT ISSUE FOR ALL THE REASONS ALREADY

03:22:11   3   STATED:

03:22:12   4   THE LIMITED PORTIONS, EVEN ALLEGEDLY COPIED;

03:22:16   5   ARISTA'S HIGHLY TRANSFORMATIVE USE OF THE CLI WITH

03:22:19   6   REVOLUTIONARY, AUTOMATED TOOLS, SOFTWARE AND HARDWARE, THAT

03:22:23   7   CREATED A NEW PARADIGM AND NEW MARKET;

03:22:27   8   AND THE LONG STANDING CUSTOM AND PRACTICE IN THE INDUSTRY,

03:22:30   9   INCLUDING BY CISCO, OF PERMITTING AND PROMOTING OTHER'S USE OF

03:22:35 10   CLI COMMANDS AND FEATURES IN COMMON THROUGH THE INDUSTRY;

03:22:37 11   AND ALSO, THE LACK OF ANY SUFFICIENT EVIDENCE OF MARKET

03:22:42 12   HARM OR POTENTIAL MARKET HARM.

03:22:44 13   A REASONABLE COPYRIGHT OWNER WOULD HAVE ACCEPTED ARISTA'S

03:22:48 14   USE HERE, GIVEN THE COMMON PRACTICE AND EXPECTATION IN THE

03:22:52 15   INDUSTRY. AS THE RECORD PROVES, CISCO DID, ITSELF, FOR MANY

03:22:57 16   YEARS BEFORE FILING THIS CASE.

03:22:59 17   ON ABANDONMENT, A REASONABLE JURY MUST FIND FOR ARISTA ON

03:23:04 18   ITS ABANDONMENT DEFENSE AS WELL BECAUSE THIS RECORD COMPELS A

03:23:10 19   FINDING THAT CISCO DEMONSTRATED ITS INTENT TO SURRENDER ANY

03:23:18 20   COPYRIGHTS IN ITS CLI THROUGH ITS ACTIONS IN THE INDUSTRY.

03:23:23 21   THE TRIAL RECORD SHOWS THAT CISCO ENCOURAGED THE

03:23:26 22   WIDESPREAD INDUSTRY USE OF CISCO'S CLI ELEMENTS TO ITS

03:23:30 23   CUSTOMERS AND NEVER PROTESTED ANYONE USING ITS CLI ALONE

03:23:35 24   WITHOUT ANY SOURCE CODE.

03:23:39 25   COPYRIGHT MISUSE.

03:23:41 1   THE SAME EVIDENCE THAT SUPPORTS ARISTA'S FAIR USE AND

03:23:44 2   ABANDONMENT DEFENSES, AS WELL AS CISCO'S DEFICIENT PROOF OF ITS

03:23:48 3   OWN CLAIMS OF COPYRIGHT INFRINGEMENT FOR ALL OTHER REASONS

03:23:52 4   ALREADY GIVEN, ALSO SEPARATELY PROVE ARISTA'S DEFENSE OF

03:23:56 5   COPYRIGHT MISUSE AS A MATTER OF LAW.

03:23:58 6   THE ONLY REASONABLE CONCLUSION ON THIS RECORD IS THAT

03:24:00 7   CISCO IS ATTEMPTING TO LEVERAGE ITS LIMITED COPYRIGHT CLAIMS,

03:24:05 8   IF ANY, AND ANY CLI ELEMENTS, TO STIFLE FAIR COMPETITION IN

03:24:12 9   MARKETS FOR PRODUCTS OR SWITCHES OR OPERATING SYSTEMS IN WHICH

03:24:15 10   CISCO HAS NO COPYRIGHT INTERESTS THAT IT CLAIMS WERE INFRINGED,

03:24:19 11   AND THAT IS AN ABUSE OF THE LIMITED COPYRIGHT MONOPOLY SEEKING

03:24:24 12   TO GAIN ANTICOMPETITIVE POWER NOT GRANTED BY CISCO'S

03:24:31 13   COPYRIGHTS.

03:24:33 14   THESE SAME FACTS, OF COURSE, ALSO SUPPORT THE EQUITABLE

03:24:36 15   DEFENSES THAT ARE FOR THE COURT TO DETERMINE. INCLUDING

03:24:43 16   LACHES, WAIVER AND ESTOPPEL, WHICH ARISTA WILL ADDRESS

03:24:47 17   SEPARATELY, OF COURSE.

03:24:49 18   AND FINALLY, THERE IS NO CAUSAL NEXUS HERE TO ANY DAMAGES.

03:24:54 19   CISCO HAS FAILED TO INTRODUCE SUFFICIENT EVIDENCE THAT ANY

03:24:59 20   COMMAND-LINE INTERFACE HAS ANY SEPARATE VALUE, OR THAT ANY OF

03:25:06 21   CISCO'S ALLEGED DAMAGES OR ARISTA'S PROFITS ARE ATTRIBUTABLE TO

03:25:10 22   ANY ALLEGED INFRINGEMENT.

03:25:12 23   CISCO'S DAMAGES CLAIMS FAIL BECAUSE CISCO LACKS THE

03:25:16 24   SUFFICIENT EVIDENCE TO PROVE ANY CAUSAL NEXUS BETWEEN COPYING

03:25:21 25   AND ITS ASSERTED DAMAGES.

03:25:23 1   AND AS TO THE MANUALS, CISCO LACKS ANY EVIDENCE AT ALL,

03:25:28 2   LET ALONE SUFFICIENT EVIDENCE, TO LINK DAMAGES TO THE ALLEGED

03:25:35 3   COPYING FROM CISCO'S TECHNICAL MANUALS.

03:25:40 4   AND NO DAMAGES CAN REASONABLY BE APPORTIONED BASED ON ANY

03:25:45 5   INFRINGEMENT OF THE MANUALS.

03:25:47 6   AND MR. ROSEN WILL ADDRESS THE OTHER ISSUES.

03:25:51 7   THE COURT: THANK YOU.

03:25:52 8   MR. ROSEN?

03:25:52 9   MR. ROSEN: GOOD AFTERNOON, YOUR HONOR. DAVID ROSEN

03:26:02 10   FOR ARISTA.

03:26:04 11   ARISTA MOVES FOR JUDGMENT AS A MATTER OF LAW THAT NO

03:26:06 12   REASONABLE JURY COULD FIND THAT ARISTA DIRECTLY INFRINGED OR

03:26:09 13   INFRINGES THE '526 PATENT.

03:26:12 14   INFRINGEMENT MUST BE PROVEN ON AN ELEMENT BY ELEMENT

03:26:15 15   BASIS, BUT CISCO HAS NOT OFFERED SUFFICIENT EVIDENCE TO SUPPORT

03:26:17 16   A FINDING OF INFRINGEMENT FOR AT LEAST THREE CLAIM LIMITATIONS.

03:26:22 17   FIRST, CISCO HAS NOT OFFERED SUFFICIENT EVIDENCE TO PROVE

03:26:25 18   THAT ARISTA'S PRODUCTS EXECUTE A PLURALITY OF MANAGEMENT

03:26:30 19   PROGRAMS OR ISSUE A PRESCRIBED COMMAND OF A SELECTED ONE OF THE

03:26:35 20   MANAGEMENT PROGRAMS.

03:26:37 21   CLAIMS 1 AND 14 OF THE '526 PATENT REQUIRE ISSUING A

03:26:42 22   PRESCRIBED COMMAND OF A MANAGEMENT PROGRAM. THE COURT

03:26:45 23   CONSTRUED "MANAGEMENT PROGRAMS" AS, TOOLS OR AGENTS CONFIGURED

03:26:49 24   TO EXECUTE USER-DIRECTED COMMANDS HAVING THEIR OWN RESPECTIVE

03:26:53 25   COMMAND FORMATS THAT PROVIDE MANAGEMENT FUNCTIONS.

03:26:57 1   ALTHOUGH CISCO'S EXPERT, DR. JEFFAY, TESTIFIED THAT ARISTA

03:27:02 2   EOS HAS AGENTS, HE DID NOT IDENTIFY A SINGLE PRESCRIBED COMMAND

03:27:06 3   THAT IS EXECUTED BY A SPECIFIC AGENT.

03:27:09 4   DR. JEFFAY'S TESTIMONY ABOUT EOS AGENTS, AS WELL AS ALL

03:27:14 5   OTHER EVIDENCE OFFERED BY CISCO ABOUT EOS AGENTS, IS NOT

03:27:17 6   SUFFICIENT EVIDENCE UPON WHICH THE JURY COULD PROPERLY FIND

03:27:22 7   THAT ARISTA'S PRODUCTS MEET THE TWO CLAIM LIMITATIONS THAT

03:27:24 8   DEPEND ON THE COURT'S CONSTRUCTION OF MANAGEMENT PROGRAMS.

03:27:29 9   ALSO, CISCO HAS NOT OFFERED EVIDENCE TO PROVE THAT

03:27:32 10   ARISTA'S PRODUCTS HAVE A COMMAND PARSE TREE, HAVING ELEMENTS

03:27:36 11   EACH SPECIFYING AT LEAST ONE GENERIC COMMAND -- PARDON ME, EACH

03:27:42 12   SPECIFYING AT LEAST ONE CORRESPONDING GENERIC COMMAND

03:27:45 13   COMPONENT, AND AT LEAST ONE COMMAND ACTION VALUE.

03:27:49 14   FIRST, CISCO'S EXPERT, DR. JEFFAY, NEVER IDENTIFIED OR

03:27:54 15   DEPICTED A SPECIFIC PARSE TREE IN ARISTA'S PRODUCTS.

03:27:57 16   SECOND, CISCO DID NOT OFFER SUFFICIENT EVIDENCE TO SHOW

03:28:01 17   THAT ANY PARSE TREE OR HIERARCHICAL DATA STRUCTURE IN ARISTA'S

03:28:05 18   PRODUCTS HAS ELEMENTS, EACH SPECIFYING AT LEAST ONE

03:28:11 19   CORRESPONDING GENERIC COMMAND COMPONENT.

03:28:12 20   THIRD, CISCO DID NOT OFFER SUFFICIENT EVIDENCE TO SHOW

03:28:16 21   THAT ANY PARSE TREE OR HIERARCHICAL DATA STRUCTURE IN ARISTA'S

03:28:20 22   PRODUCTS HAS ELEMENTS EACH SPECIFYING AT LEAST ONE COMMAND

03:28:27 23   ACTION VALUE.

03:28:28 24   IN FACT, DR. JEFFAY'S TESTIMONY SUPPORTS THE CONCLUSION

03:28:31 25   THAT THERE ARE ELEMENTS IN ARISTA'S PARSE TREE THAT HAVE NO

03:28:34   1   COMMAND ACTION VALUES.

03:28:35   2   ARISTA ALSO MOVES FOR JUDGMENT AS A MATTER OF LAW THAT NO

03:28:39   3   REASONABLE JURY COULD FIND THAT ARISTA INDUCED INFRINGEMENT OF

03:28:42   4   THE '526 PATENT.

03:28:44   5   TO PROVE INDUCED INFRINGEMENT, CISCO MUST PROVE THAT

03:28:48   6   ARISTA KNEW THAT THE ACTS IT WAS CAUSING WOULD INFRINGE THE

03:28:51   7   PATENT OR WILLFULLY BLINDED ITSELF TO THE INFRINGING NATURE OF

03:28:56   8   THE DIRECT INFRINGER'S ACTS.

03:28:59   9   AS THE SUPREME COURT HAS RECENTLY CLARIFIED, SHOWING THAT

03:29:02   10   THE DEFENDANT HAD KNOWLEDGE OF THE PATENT IS NOT SUFFICIENT TO

03:29:05   11   PROVE INDUCED INFRINGEMENT.

03:29:07   12   CISCO OFFERED INSUFFICIENT EVIDENCE TO PROVE THAT ARISTA

03:29:10   13   KNEW THAT THE ACTS IT WAS CAUSING WOULD INFRINGE THE PATENT.

03:29:14   14   CISCO'S PATENT INFRINGEMENT EXPERT, DR. JEFFAY, TESTIFIED

03:29:17   15   THAT USERS OF THE EOS PERFORM STEPS THAT ALLEGEDLY INFRINGE THE

03:29:21   16   PATENTS, BUT THE ONLY EVIDENCE UPON WHICH HE RELIED TO SUPPORT

03:29:25   17   THE KNOWLEDGE REQUIREMENT OF INDUCEMENT, WAS THE FACT THAT

03:29:28   18   CISCO HAD FILED A COMPLAINT ALLEGING THAT ARISTA INFRINGED THE

03:29:33   19   '526 PATENT.

03:29:34   20   IN SUM, CISCO DID NOT IDENTIFY SUFFICIENT EVIDENCE TO

03:29:37   21   SUPPORT A FINDING THAT ARISTA KNEW THAT IT WAS INDUCING

03:29:41   22   INFRINGEMENT OF THE '526 PATENT.

03:29:44   23   FOR SIMILAR REASONS, ARISTA MOVES FOR JUDGMENT AS A MATTER

03:29:48   24   OF LAW THAT NO REASONABLE JURY COULD FIND THAT ARISTA

03:29:51   25   CONTRIBUTED TO INFRINGEMENT BY ANOTHER.

03:29:53 1   TO PROVE CONTRIBUTORY PATENT INFRINGEMENT, CISCO MUST

03:29:57 2   PROVE THAT CISCO SUPPLIED AN INFRINGING COMPONENT WITH THE

03:30:00 3   KNOWLEDGE THAT THE COMPONENT WAS ESPECIALLY MADE FOR USE IN AN

03:30:05 4   INFRINGING MANNER.

03:30:06 5   CISCO OFFERED THE SAME EVIDENCE TO PROVE CONTRIBUTORY

03:30:09 6   INFRINGEMENT THAT IT OFFERED TO PROVE INDUCEMENT.

03:30:12 7   THE KNOWLEDGE REQUIREMENT OF CONTRIBUTORY INFRINGEMENT AND

03:30:17 8   INDUCED INFRINGEMENT ARE THE SAME.

03:30:19 9   FOR THE SAME REASONS THAT CISCO'S EVIDENCE IS INSUFFICIENT

03:30:22 10   TO SUPPORT A FINDING THAT ARISTA INDUCED INFRINGEMENT OF THE

03:30:26 11   '526 PATENT, IT IS ALSO INSUFFICIENT TO SUPPORT A FINDING THAT

03:30:30 12   ARISTA CONTRIBUTED TO THE INFRINGEMENT OF ANOTHER.

03:30:36 13   ARISTA ALSO MOVES FOR JUDGMENT AS A MATTER OF LAW THAT NO

03:30:40 14   REASONABLE JURY COULD FIND THAT INFRINGEMENT OF THE '526 PATENT

03:30:44 15   WAS WILLFUL.

03:30:44 16   THE COURT ALLOWED CISCO TO PRESENT AT TRIAL ITS CLAIM THAT

03:30:48 17   ARISTA WILLFULLY INFRINGED THE '526 PATENT BY SELLING EOS PLUS,

03:30:54 18   AFTER CISCO FILED ITS COMPLAINT, WHICH WAS THE ONLY BASIS THAT

03:30:58 19   CISCO ALLEGED FOR WILFULNESS IN ITS COMPLAINT AND IN ITS PATENT

03:31:02 20   LOCAL RULE DISCLOSURES.

03:31:05 21   SPECIFICALLY, THE COURT APPROVED A PATENT WILFULNESS JURY

03:31:08 22   INSTRUCTION THAT REQUIRED THAT TO PROVE THAT THE SALE OF THE

03:31:12 23   EOS PLUS IS AN ACT OF WILLFUL INFRINGEMENT, CISCO MUST PERSUADE

03:31:18 24   YOU THAT EOS PLUS IS A NEW PRODUCT COMPARED TO EOS.

03:31:21 25   CISCO PRESENTED INSUFFICIENT EVIDENCE THAT EOS PLUS IS A

03:31:25 1   NEW PRODUCT OR THAT ARISTA WILLFULLY INFRINGED '526 PATENT BY

03:31:31 2   SELLING EOS PLUS.

03:31:32 3   ASIDE FROM THE MENTION OF EOS PLUS IN CISCO'S OPENING

03:31:36 4   STATEMENT, THERE ARE ONLY TWO MENTIONS OF EOS PLUS IN THE

03:31:38 5   ENTIRE TRIAL RECORD.

03:31:39 6   ONE IS A CURSORY STATEMENT BY CISCO'S PATENT INFRINGEMENT

03:31:42 7   EXPERT, DR. JEFFAY, THAT HIS ANALYSIS WAS BASED ON THE SOFTWARE

03:31:46 8   THAT RUNS THE ARISTA PRODUCTS, INCLUDING EOS, EOS PLUS AND

03:31:52 9   VEOS.

03:31:52 10   THE OTHER INSTANCE IN THE RECORD IS A STATEMENT BY

03:31:55 11   ARISTA'S PATENT EXPERT, DR. CHASE, THAT HE WAS NOT FAMILIAR

03:31:59 12   WITH EOS PLUS AND DID NOT KNOW IF EOS PLUS WAS DISTINCT FROM

03:32:05 13   EOS.

03:32:05 14   IN SHORT, NO REASONABLE JURY COULD FIND WILLFUL

03:32:09 15   INFRINGEMENT BASED ON THE EVIDENCE IN THE RECORD.

03:32:11 16   FINALLY, YOUR HONOR, ARISTA MOVES FOR JUDGMENT AS A MATTER

03:32:15 17   OF LAW THAT CISCO HAS NOT PROVIDED SUFFICIENT EVIDENCE TO

03:32:17 18   SUPPORT A DAMAGES AWARD FOR THE '526 PATENT.

03:32:21 19   CISCO'S EXPERT, DR. CHEVALIER, OPINED THAT CISCO WAS

03:32:26 20   ENTITLED TO 2, TO $2.2 MILLION OF DAMAGES FOR THE ARISTA'S

03:32:35 21   ALLEGED INFRINGEMENT OF THE '526 PATENT.

03:32:41 22   TO ARRIVE AT HER ESTIMATE, DR. CHEVALIER RELIED ON THE

03:32:45 23   OPINION OF CISCO'S PATENT INFRINGEMENT EXPERT, DR. JEFFAY, WHO

03:32:48 24   ESTIMATED THAT IT WOULD TAKE 20 ENGINEERS SIX MONTHS TO DESIGN

03:32:54 25   AROUND THE PATENTED TECHNOLOGY.

03:32:55 1   DR. CHEVALIER TOOK DR. JEFFAY'S ESTIMATE OF THE NUMBER OF

03:32:58 2   ENGINEERS REQUIRED FOR HALF A YEAR, AND THEN MULTIPLIED THAT BY

03:33:02 3   THE ESTIMATED SALARY OF AN ENGINEER. THE RESULTING 2 TO

03:33:10 4 $2.2 MILLION FIGURE WAS THE ONLY OPINION ON ANY ACTUAL DAMAGES

03:33:14 5   NUMBER OFFERED IN THE CASE WITH RESPECT TO THE '526 PATENT.

03:33:18 6   HOWEVER, DR. JEFFAY'S DESIGN-AROUND OPINION DID NOT

03:33:21 7   INCLUDE ANY FACTS OR ANALYSIS CONCERNING HOW MUCH TIME IT WOULD

03:33:25 8   TAKE TO DESIGN-AROUND THE '526 PATENT ON A PER-COMMAND BASIS.

03:33:31 9   IF THE JURY ULTIMATELY CONCLUDES THAT ARISTA DOES NOT

03:33:34 10   INFRINGE ALL OF THE COMMANDS ACCUSED BY CISCO OF INFRINGEMENT

03:33:37 11   IN THIS CASE, OR IF THE COURT DECIDES THAT CISCO IS LIMITED AS

03:33:41 12   A MATTER OF LAW TO A SUBSET OF THE COMMANDS THAT IT IS ACCUSED

03:33:44 13   OF INFRINGEMENT, THEN THERE IS INSUFFICIENT EVIDENCE IN THE

03:33:48 14   RECORD FOR THE JURY TO APPORTION THE 2.0 TO $2.2 MILLION

03:33:53 15   DAMAGES FIGURE PROVIDED BY DR. CHEVALIER.

03:33:56 16   ACCORDINGLY, THERE IS INSUFFICIENT EVIDENCE IN THE RECORD

03:33:58 17   TO SUPPORT A DAMAGES AWARD FOR INFRINGEMENT OF THE '526 PATENT.

03:34:03 18   THE COURT: THANK YOU.

03:34:05 19   ALL RIGHT. IS THAT EVERYTHING? THANK YOU VERY MUCH.

03:34:09 20   IT IS -- HAVING LISTENED TO THE GROUNDS FOR THE DEFENSE

03:34:13 21   JMOL, I WILL DEFER RULING UNTIL AFTER THE JURY RENDERS A

03:34:19 22   VERDICT, AND OF COURSE THAT'S WITHOUT PREJUDICE TO FURTHER

03:34:21 23   MOTIONS.

03:34:21 24   THE PLAINTIFF'S MOTION, I WILL SEE WHEN IT'S FILED AND

03:34:24 25   DETERMINE HOW TO RULE ON IT WHEN I SEE IT.

03:34:26   1   ALL RIGHT. IS THERE ANYTHING ELSE THIS AFTERNOON?

03:34:29   2   MR. VAN NEST: I DON'T BELIEVE SO, YOUR HONOR.

03:34:30   3   THE COURT: ALL RIGHT. I KNOW YOU HAVE A LOT OF WORK

03:34:32   4   AHEAD OF YOU, SO WE WILL BE ADJOURNED FOR THE DAY.

03:34:35   5   MR. VAN NEST: THANK YOU, YOUR HONOR.

03:34:36   6   MR. PAK: THANK YOU, YOUR HONOR.

03:34:36   7   (THE PROCEEDINGS WERE CONCLUDED AT 3:34 P.M.)

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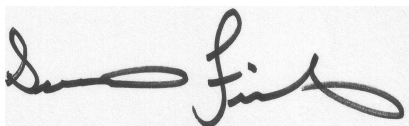
4   **CERTIFICATE OF REPORTER**

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8   I, THE UNDERSIGNED OFFICIAL COURT

9   REPORTER OF THE UNITED STATES DISTRICT COURT FOR

10   THE NORTHERN DISTRICT OF CALIFORNIA, 280 SOUTH

11   FIRST STREET, SAN JOSE, CALIFORNIA, DO HEREBY

12   CERTIFY:

13   THAT THE FOREGOING TRANSCRIPT,

14   CERTIFICATE INCLUSIVE, CONSTITUTES A TRUE, FULL AND

15   CORRECT TRANSCRIPT OF MY SHORTHAND NOTES TAKEN AS

16   SUCH OFFICIAL COURT REPORTER OF THE PROCEEDINGS

17   HEREINBEFORE ENTITLED AND REDUCED BY COMPUTER-AIDED

18   TRANSCRIPTION TO THE BEST OF MY ABILITY.

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24   _____

25   SUMMER A. FISHER, CSR, CRR
     CERTIFICATE NUMBER 13185   DATED: 12/9/16

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09:03:33   1   MR. NELSON: THAT'S PERFECTLY FINE, YOUR HONOR.

09:03:35   2   THE COURT: IT'S FINE WITH ME TOO, IT'S JUST -- YOU

09:03:38   3   CAN LOOK AT THESE THINGS A HUNDRED TIMES AND STILL FIND

09:03:42   4   SOMETHING ELSE THAT YOU COULD DO DIFFERENTLY.

09:03:44   5   AND THE VERDICT FORM, OF COURSE, I HAVE THAT AS WELL.

09:03:46   6   OKAY. I THINK THEN THAT'S EVERYTHING. AND IS OUR JURY

09:03:50   7   HERE?

09:03:51   8   THE CLERK: WE ARE STILL MISSING ONE.

09:03:54   9   THE COURT: OKAY.

09:09:17   10   (COURT CONVENED AT 9:05 A.M.)

09:09:17   11   THE COURT: GOOD MORNING, EVERYONE. PLEASE BE

09:09:18   12   SEATED.

09:09:19   13   WE ARE ON THE RECORD AND ALL OF OUR JURORS ARE HERE.

09:09:29   14   ALL RIGHT. WHEN WE FINISHED ON FRIDAY, I TOLD YOU THAT

09:09:32   15   THE PARTIES HAD COMPLETED THE PRESENTATION OF THE EVIDENCE.

09:09:36   16   AND SO TODAY WE ARE GOING TO MOVE INTO THE LAST PHASE OF THE

09:09:40   17   COURTROOM PART OF THE TRIAL.

09:09:42   18   I'M GOING TO READ TO YOU THE FINAL JURY INSTRUCTIONS.

09:09:47   19   THEY ARE RELATIVELY LONG, AND I KNOW YOU WILL LISTEN CAREFULLY.

09:09:51   20   AND YOU ARE FREE TO TAKE NOTES ON THEM IF YOU WISH.

09:09:53   21   YOU WILL RECEIVE COPIES OF THE JURY INSTRUCTIONS IN THE

09:09:56   22   JURY ROOM, SO YOU DON'T HAVE TO WORRY ABOUT THEM GOING BY SO

09:10:00   23   FAST. SO IT'S COMPLETELY UP TO YOU AS TO WHETHER NOTE TAKING

09:10:04   24   IS HELPFUL TO YOU AT THIS POINT.

09:10:07   25   WHEN I'M DONE READING THE JURY INSTRUCTIONS, WE WILL TAKE

09:10:09 1   A SHORT BREAK. THIS IS PARTICULARLY CHALLENGING FOR OUR COURT

09:10:14 2   REPORTER BECAUSE WHEN I READ THE INSTRUCTIONS, AND THEN THE

09:10:17 3   LAWYERS GIVE CLOSING ARGUMENTS, SO THERE AREN'T THE NORMAL

09:10:21 4   BREAKS THAT YOU GET IN QUESTIONS AND ANSWERS. AND SO IT GOES

09:10:24 5   PRETTY QUICKLY AND SHE NEEDS A BREAK, AND ALL OF US DON'T MIND

09:10:28 6   A LITTLE STRETCH AFTER ABOUT AN HOUR ANYWAY. AND THEN I WON'T

09:10:31 7   HAVE TO INTERRUPT THE FINAL ARGUMENTS OF THE ATTORNEYS.

09:10:35 8   AND SO WHAT I'M GOING TO DO IS READ TO YOU THE

09:10:38 9   INSTRUCTIONS ON THE LAW. I AM GOING TO REPEAT A FEW OF THE

09:10:42 10   INSTRUCTIONS I GAVE YOU TWO WEEKS AGO WHEN WE STARTED, ABOUT

09:10:46 11   THE EVIDENCE. AND IT'S JUST A TYPICAL WAY OF REORIENTING YOU

09:10:53 12   INTO THE INSTRUCTIONS.

09:10:53 13   I'M GOING TO STOP RIGHT BEFORE I TELL YOU WHAT TO DO IN

09:10:57 14   THE DELIBERATION ROOM. IT MAY BE THE THING YOU ARE MOST

09:11:00 15   INTERESTED IN, BUT I'M GOING TO DO THAT RIGHT BEFORE I SEND YOU

09:11:03 16   OFF INTO THE JURY ROOM TO DELIBERATE, AND I WILL GIVE YOU

09:11:06 17   LENGTHY INSTRUCTIONS AND COMMENTS ABOUT WHAT YOU DO IN THE JURY

09:11:10 18   ROOM. SO THAT WILL COME THIS AFTERNOON WHEN THE CLOSING

09:11:14 19   ARGUMENTS ARE DONE.

09:11:17 20   AS YOU'VE SEEN THROUGHOUT THE TRIAL, THE ATTORNEYS HAVE

09:11:20 21   BEEN ON A SCHEDULE. WE TALKED ABOUT THAT AND WORKED OUT A

09:11:24 22   REASONABLE SCHEDULE FOR THE TRIAL, AND THE SAME GOES FOR THE

09:11:29 23   CLOSING ARGUMENTS. THEY HAVE A CERTAIN AMOUNT OF TIME THAT

09:11:31 24   THEY'VE REQUESTED, AND THAT I'VE AGREED TO FOR THEIR CLOSING

09:11:35 25   ARGUMENTS, AND THEY WILL BE WORKING ON THAT SCHEDULE, THAT'S

09:11:38 1   WHAT IS DONE IN ALL FEDERAL TRIALS.

09:11:41 2   AND SO I HAVE REASONABLE CERTAINTY AS TO WHEN WE WILL

09:11:44 3   CONCLUDE. WE WON'T FINISH THE CLOSING ARGUMENTS BEFORE LUNCH.

09:11:49 4   THERE'S JUST NOT QUITE ENOUGH TIME TO GET THAT DONE.

09:11:52 5   SO WE WILL GO UNTIL ABOUT AN HOUR TO ABOUT 10:00 WITH

09:11:59 6   THIS, TAKE A SHORT BREAK. COME BACK IN, THE PLAINTIFF WILL

09:12:03 7   START WITH THEIR INITIAL CLOSING ARGUMENT. WE WILL TAKE

09:12:05 8   ANOTHER SHORT BREAK. WE WILL LET ARISTA BEGIN ITS CLOSING

09:12:09 9   ARGUMENT, I DON'T THINK THEY WILL GET TO FINISH BEFORE LUNCH.

09:12:14 10   WE WILL TAKE OUR LUNCH BREAK, COME BACK, FINISH UP, AND I

09:12:17 11   EXPECT YOU WILL HAVE THIS CASE BY MID-AFTERNOON.

09:12:20 12   LET ME JUST ALSO COMMENT, AND I MAY SAY THIS AGAIN LATER,

09:12:25 13   AS I'VE SAID TO YOU BEFORE, NOTHING THE ATTORNEYS SAY IS

09:12:28 14   EVIDENCE, BUT WHAT THEY SAY TO YOU IN CLOSING ARGUMENT IS VERY

09:12:32 15   IMPORTANT. IT IS THEIR OPPORTUNITY TO DISCUSS WITH YOU THEIR

09:12:36 16   VIEW OF THE EVIDENCE AND HOW YOU MIGHT CONSIDER IT.

09:12:40 17   THEY ALSO WILL BE TALKING ABOUT CERTAIN EVIDENCE THAT THEY

09:12:44 18   FIND PARTICULARLY IMPORTANT TO THE POINTS THEY ARE TRYING TO

09:12:47 19   PERSUADE YOU ON. AND THEY MAY MENTION EXHIBITS BY NUMBER.

09:12:52 20   AS YOU NOTICED DURING THE TRIAL, THERE WERE A LOT OF

09:12:55 21   EXHIBITS. YOU WILL BE RECEIVING A LIST OF EXHIBITS WITH A

09:12:59 22   BRIEF DESCRIPTION OF IT, AND THE EXHIBITS I WILL EXPLAIN TO

09:13:02 23   YOU, WILL BE GIVEN TO YOU ELECTRONICALLY.

09:13:04 24   YOU MIGHT FIND IT WORTH YOUR WHILE TO JOT DOWN SOME

09:13:09 25   EXHIBIT NUMBERS IF WHEN YOU'RE LISTENING IF YOU FIND THAT THOSE

09:13:12 1   EXHIBITS MIGHT BE SOMETHING YOU PARTICULARLY WANT TO GO IN AND

09:13:16 2   LOOK AT.

09:13:16 3   YOU WILL NOT HAVE A TRANSCRIPT OF THE LAWYER'S CLOSING

09:13:19 4   ARGUMENTS. SO I JUST COMMENT THAT IT MAY BE HELPFUL TO YOU TO

09:13:24 5   WRITE SOME THINGS DOWN.

09:13:25 6   BY THE SAME TOKEN, THE LAWYERS MAY MENTION SOME NUMBERS TO

09:13:29 7   YOU THROUGHOUT THEIR CLOSING ARGUMENTS, AND THEY MIGHT, AS

09:13:33 8   YOU'VE SEEN, THEY'VE HAD SOME NICE DISPLAYS THAT HAVE BEEN AN

09:13:42 9   OPPORTUNITY FOR THEM TO ILLUSTRATE TO YOU WHAT THEY ARE SAYING

09:13:47 10   WITH WORDS, AND THOSE THINGS DON'T GO INTO THE JURY ROOM

09:13:50 11   EITHER.

09:13:50 12   SO IF YOU SEE THINGS WRITTEN DOWN OR YOU HEAR THINGS THAT

09:13:54 13   ARE OF PARTICULAR INTEREST TO YOU, AGAIN, YOU MAY WISH TO TAKE

09:13:57 14   NOTES. I JUST WOULD HATE FOR YOU TO GET TO THE JURY ROOM AND

09:14:01 15   SAY, WELL, NOW WHERE ARE THOSE NICE PICTURES I SAW, ONLY TO

09:14:05 16   LEARN THEY DON'T COME IN AND YOU CAN'T REMEMBER THE PRECISE

09:14:08 17   STATEMENT THAT WAS MADE TO GO ALONG WITH IT.

09:14:11 18   SO JUST A SUGGESTION, BUT YOU KNOW, NOTES ARE NOT

09:14:15 19   REQUIRED, YOU MIGHT NOT FIND -- YOU MIGHT FIND YOUR OWN MEMORY

09:14:18 20   IS JUST EXACTLY WHAT YOU NEED AND THAT'S PERFECT. YOU MIGHT

09:14:21 21   TAKE NOTES, YOU SEE ME, I TAKE NOTES ALL THE TIME. IT'S NOT

09:14:25 22   THAT I READ THEM, IT'S JUST THAT IT HELPS ME TO REMEMBER IT

09:14:27 23   WHILE IT'S GOING ON. IT'S JUST TECHNIQUES THAT WE ALL USE.

09:14:31 24   SO THOSE ARE MY SUGGESTIONS. I'M GOING TO HOPE MY VOICE

09:14:36 25   HOLDS OUT, I THINK I'M DOING PRETTY WELL, AND GIVE YOU THESE

09:14:39   1   JURY INSTRUCTIONS.

09:14:46   2   MEMBERS OF THE JURY, NOW THAT YOU HAVE HEARD ALL -- I'M

09:14:50   3   GOING TO START OUT BADLY -- NOW THAT YOU HAVE HEARD THE

09:14:59   4   EVIDENCE AND WILL HEAR THE ARGUMENTS OF THE ATTORNEYS, IT IS MY

09:15:03   5   DUTY TO INSTRUCT YOU ON THE LAW THAT APPLIES TO THIS CASE.

09:15:06   6   A COPY OF THESE INSTRUCTIONS WILL BE SENT TO THE JURY ROOM

09:15:09   7   FOR YOU TO CONSULT DURING YOUR DELIBERATIONS.

09:15:13   8   IT IS YOUR DUTY TO FIND THE FACTS FROM ALL THE EVIDENCE IN

09:15:17   9   THE CASE. TO THOSE FACTS, YOU WILL APPLY THE LAW AS I NOW GIVE

09:15:20   10   IT TO YOU. YOU MUST FOLLOW THE LAW AS I GIVE IT TO YOU WHETHER

09:15:25   11   YOU AGREE WITH IT OR NOT. AND YOU MUST NOT BE INFLUENCED BY

09:15:28   12   ANY PERSONAL LIKES OR DISLIKES, OPINIONS, PREJUDICES OR

09:15:32   13   SYMPATHY. THAT MEANS THAT YOU MUST DECIDE THE CASE SOLELY ON

09:15:38   14   THE EVIDENCE BEFORE YOU. YOU WILL RECALL THAT YOU TOOK AN OATH

09:15:41   15   TO DO SO.

09:15:42   16   PLEASE DO NOT READ INTO THESE INSTRUCTIONS, OR ANYTHING

09:15:45   17   THAT I MAY HAVE SAID OR DONE, THAT I HAVE AN OPINION REGARDING

09:15:49   18   THE EVIDENCE OF WHAT YOUR VERDICT SHOULD BE.

09:15:55   19   THE EVIDENCE YOU ARE TO DECIDE THE FACTS ARE -- THE

09:16:06   20   EVIDENCE YOU ARE TO CONSIDER IN DECIDING THE FACTS CONSISTS OF,

09:16:10   21   THE SWORN TESTIMONY OF ANY WITNESS, THE EXHIBITS THAT ARE

09:16:13   22   ADMITTED INTO EVIDENCE, ANY FACTS TO WHICH THE LAWYERS HAVE

09:16:17   23   AGREED, AND ANY FACTS THAT I HAVE INSTRUCTED YOU TO ACCEPT AS

09:16:24   24   PROVED.

09:16:27   25   IN REACHING YOUR VERDICT, YOU MAY CONSIDER ONLY THE

09:16:29 1   TESTIMONY AND EXHIBITS RECEIVED INTO EVIDENCE. CERTAIN THINGS

09:16:31 2   ARE NOT EVIDENCE AND YOU MAY NOT CONSIDER THEM IN DECIDING WHAT

09:16:34 3   THE FACTS ARE.

09:16:38 4   ARGUMENTS AND STATEMENTS BY LAWYERS ARE NOT EVIDENCE. THE

09:16:42 5   LAWYERS ARE NOT WITNESSES. WHAT THEY HAVE SAID IN THEIR

09:16:45 6   OPENING STATEMENTS AND WILL SAY IN THEIR CLOSING ARGUMENTS AND

09:16:50 7   AT OTHER TIMES IS INTENDED TO HELP YOU INTERPRET THE EVIDENCE,

09:16:53 8   BUT IT IS NOT EVIDENCE. IF THE FACTS AS YOU REMEMBER THEM

09:16:57 9   DIFFER FROM THE WAY THE LAWYERS HAVE STATED THEM, YOUR MEMORY

09:16:59 10   OF THEM CONTROLS.

09:17:02 11   QUESTIONS AND OBJECTIONS BY LAWYERS ARE NOT EVIDENCE.

09:17:06 12   ATTORNEYS HAVE A DUTY TO THEIR CLIENTS TO OBJECT WHEN THEY

09:17:10 13   BELIEVE A QUESTION IS IMPROPER UNDER THE RULES OF EVIDENCE.

09:17:16 14   YOU SHOULD NOT BE INFLUENCED BY THE OBJECTION OR BY THE COURT'S

09:17:19 15   RULING ON IT.

09:17:20 16   TESTIMONY AND EXHIBITS THAT HAVE BEEN EXCLUDED OR STRICKEN

09:17:23 17   OR THAT YOU HAVE BEEN INSTRUCTED TO DISREGARD ARE NOT EVIDENCE

09:17:28 18   AND MUST NOT BE CONSIDERED.

09:17:31 19   IN ADDITION, SOME EVIDENCE MAY BE RECEIVED ONLY FOR A

09:17:34 20   LIMITED PURPOSE. WHEN I GIVE A LIMITING INSTRUCTION, YOU MUST

09:17:38 21   FOLLOW IT.

09:17:40 22   ANYTHING YOU MAY HAVE SEEN OR HEARD WHEN COURT WAS NOT IN

09:17:43 23   SESSION IS NOT EVIDENCE. YOU ARE TO DECIDE THE CASE SOLELY ON

09:17:47 24   THE EVIDENCE RECEIVED AT THE TRIAL.

09:17:53 25   SOME WITNESSES, BECAUSE OF EDUCATION OR EXPERIENCE, ARE

09:17:55   1   PERMITTED TO STATE OPINIONS AND THE REASONS FOR THOSE OPINIONS.

09:18:00   2   SUCH OPINION TESTIMONY SHOULD BE JUDGED LIKE ANY OTHER

09:18:03   3   TESTIMONY. YOU MAY ACCEPT IT OR REJECT IT, AND GIVE IT AS MUCH

09:18:08   4   WEIGHT AS YOU THINK IT DESERVES, CONSIDERING THE WITNESS'S

09:18:12   5   EDUCATION AND EXPERIENCE, THE REASONS GIVEN FOR THE OPINION AND

09:18:15   6   AUGUST THE OTHER EVIDENCE IN THE CASE.

09:18:19   7   CERTAIN CHARTS AND SUMMARIES ARE NOT ADMITTED INTO

09:18:22   8   EVIDENCE AND HAVE BEEN SHOWN TO YOU IN ORDER TO HELP EXPLAIN

09:18:24   9   THE CONTENTS OF BOOKS, RECORDS, DOCUMENTS OR OTHER EVIDENCE IN

09:18:28 10   THE CASE.

09:18:34 11   CHARTS AND SUMMARIES ARE ONLY AS GOOD AS THE UNDERLYING

09:18:38 12   EVIDENCE THAT SUPPORTS THEM. YOU SHOULD, THEREFORE, GIVE THEM

09:18:41 13   ONLY SUCH WEIGHT AS YOU THINK THE UNDERLYING EVIDENCE DESERVES.

09:18:48 14   CERTAIN CHARTS AND SUMMARIES HAVE BEEN ADMITTED INTO

09:18:53 15   EVIDENCE TO ILLUSTRATE INFORMATION BROUGHT OUT IN THE TRIAL.

09:18:55 16   CHARTS AND SUMMARIES ARE ONLY AS GOOD AS THE TESTIMONY OR OTHER

09:18:59 17   ADMITTED EVIDENCE THAT SUPPORTS THEM. YOU SHOULD, THEREFORE,

09:19:01 18   GIVE THEM ONLY SUCH WEIGHT AS YOU THINK THE UNDERLYING EVIDENCE

09:19:06 19   DESERVES.

09:19:10 20   WHEN A PARTY HAS THE BURDEN OF PROOF ON ANY CLAIM OR

09:19:14 21   AFFIRMATIVE DEFENSE BY PREPONDERANCE OF THE EVIDENCE, IT MEANS

09:19:19 22   YOU MUST BE PERSUADED BY THE EVIDENCE THAT THE CLAIM OR

09:19:23 23   AFFIRMATIVE DEFENSE IS MORE PROBABLY TRUE THAN NOT TRUE.

09:19:27 24   PREPONDERANCE OF THE EVIDENCE BASICALLY MEANS MORE LIKELY THAN

09:19:29 25   NOT. YOU SHOULD BASE YOUR DECISION ON ALL OF THE EVIDENCE,

09:19:36 1   REGARDLESS OF WHICH PARTY PRESENTED IT.

09:19:42 2   COPYRIGHT IS THE EXCLUSIVE RIGHT TO COPY. THIS RIGHT TO

09:19:46 3   COPY INCLUDES THE EXCLUSIVE RIGHTS TO OR TO AUTHORIZE OTHERS

09:19:51 4   TO:

09:19:52 5   1.   REPRODUCE THE COPYRIGHTED WORK IN COPIES.

09:19:55 6   2.   RECAST OR ADAPT THE WORK. THAT IS, PREPARE DERIVATIVE

09:20:00 7   WORKS BASED UPON THE COPYRIGHTED WORK.

09:20:04 8   3.   DISTRIBUTE COPIES OF THE COPYRIGHTED WORK TO THE

09:20:09 9   PUBLIC BY SALE OR OTHER TRANSFER OF OWNERSHIP.

09:20:13 10   4.   DISPLAY PUBLICLY A COPYRIGHTED WORK.

09:20:17 11   IT IS THE OWNER OF A COPYRIGHT WHO MAY EXERCISE THESE

09:20:21 12   EXCLUSIVE RIGHTS.

09:20:22 13   THE TERM "OWNER" INCLUDES THE AUTHOR OF THE WORK. IN

09:20:26 14   GENERAL, COPYRIGHT LAW PROTECTS AGAINST REPRODUCTION,

09:20:30 15   ADAPTATION, DISTRIBUTION, OR DISPLAY OF INFRINGING COPES OF THE

09:20:35 16   OWNER'S COPYRIGHTED WORK WITHOUT THE OWNER'S PERMISSION. AN

09:20:40 17   OWNER MAY ENFORCE THESE RIGHTS TO EXCLUDE OTHERS IN AN ACTION

09:20:44 18   FOR COPYRIGHT INFRINGEMENT.

09:20:51 19   THE COPYRIGHTED WORKS INVOLVED IN THIS TRIAL ARE:

09:20:55 20   1.   CISCO'S FOUR USER INTERFACES FOR IOS, IOS XR, IOS XE,

09:21:03 21   AND NX-OS.

09:21:06 22   2.   CISCO'S TECHNICAL MANUALS.

09:21:09 23   YOU ARE INSTRUCTED THAT A COPYRIGHT MAY BE OBTAINED IN

09:21:13 24   USER INTERFACES AND TECHNICAL MANUALS.

09:21:19 25   COPYRIGHT LAW ALLOWS THE AUTHOR OF AN ORIGINAL WORK TO

09:21:23 1   STOP OTHERS FROM COPYING THE ORIGINAL EXPRESSION IN THE

09:21:28 2   AUTHOR'S WORK. ONLY THE PARTICULAR EXPRESSION OF AN IDEA CAN

09:21:32 3   BE COPYRIGHTED AND PROTECTED.

09:21:35 4   COPYRIGHT LAW DOES NOT GIVE THE AUTHOR THE RIGHT TO

09:21:38 5   PREVENT OTHERS FROM COPYING OR USING THE UNDERLYING IDEAS

09:21:42 6   CONTAINED IN THE WORK, SUCH AS ANY PROCEDURES, PROCESSES,

09:21:45 7   SYSTEMS, METHODS OF OPERATION, CONCEPTS, PRINCIPLES OR

09:21:51 8   DISCOVERIES.

09:21:58 9   ANYONE WHO COPIES ORIGINAL PROTECTABLE EXPRESSION FROM A

09:22:04 10 COPYRIGHTED WORK DURING THE TERM OF THE COPYRIGHT WITHOUT THE

09:22:08 11 OWNER'S PERMISSION INFRINGES THE COPYRIGHT.

09:22:12 12   CISCO HAS THE BURDEN OF PROVING BY A PREPONDERANCE OF THE

09:22:16 13 EVIDENCE THAT:

09:22:17 14   1. CISCO IS THE OWNER OF A VALID COPYRIGHT.

09:22:21 15   2. ARISTA COPIED ORIGINAL, PROTECTABLE EXPRESSION FROM

09:22:24 16 THE COPYRIGHTED WORK.

09:22:29 17   CISCO IS THE OWNER OF VALID COPYRIGHTS IN ITS FOUR USER

09:22:33 18 INTERFACES FOR IOS, IOS XR, IOS XE AND NX-OS AND RELATED

09:22:42 19 DOCUMENTATION IF CISCO PROVES BY A PREPONDERANCE OF THE

09:22:47 20 EVIDENCE THAT:

09:22:48 21   1. CISCO'S WORKS ARE ORIGINAL.

09:22:51 22   2. CISCO IS THE AUTHOR OR CREATOR OF THE WORKS, OR THE

09:22:54 23 AUTHOR OR CREATOR ASSIGNED OR EXCLUSIVELY LICENSED THE WORKS TO

09:23:01 24 CISCO.

09:23:05 25   A COPYRIGHT OWNER MAY OBTAIN A CERTIFICATE OF REGISTRATION

09:23:09   1   FROM THE COPYRIGHT OFFICE. THE EVIDENCE IN THIS CASE INCLUDES

09:23:12   2   26 CERTIFICATES OF COPYRIGHT REGISTRATION FROM THE COPYRIGHT

09:23:15   3   OFFICE FOR CISCO'S COPYRIGHTED WORKS.

09:23:21   4   IF YOU FIND THAT A CERTIFICATE WAS MADE WITHIN FIVE YEARS

09:23:26   5   AFTER FIRST PUBLICATION OF THAT WORK, YOU MAY CONSIDER THAT

09:23:30   6   CERTIFICATE AS EVIDENCE OF THE FACTS STATED IN IT.

09:23:34   7   FROM THE CERTIFICATE, YOU MAY, BUT NEED NOT, CONCLUDE THAT

09:23:38   8   THE WORK IS ORIGINAL AND COPYRIGHTABLE AND THAT CISCO OWNS THE

09:23:43   9   COPYRIGHT IN THAT WORK.

09:23:47   10   AN ORIGINAL WORK MAY INCLUDE OR INCORPORATE ELEMENTS TAKEN

09:23:52   11   FROM PRIOR WORKS, FROM THE PUBLIC DOMAIN, AND/OR WORKS OWNED BY

09:23:58   12   OTHERS WITH THE OWNER'S PERMISSION. THE ORIGINAL PARTS OF

09:24:03   13   PLAINTIFF'S WORK ARE THE PARTS CREATED:

09:24:05   14   1. INDEPENDENTLY BY THE WORK'S AUTHOR. THAT IS, THE

09:24:09   15   AUTHOR DID NOT COPY IT FROM ANOTHER WORK.

09:24:12   16   2. BY USE OF AT LEAST SOME MINIMAL CREATIVITY.

09:24:17   17   IN COPYRIGHT LAW, THE ORIGINAL PART OF THE WORK NEED NOT

09:24:20   18   BE NEW OR NOVEL.

09:24:25   19   AN OWNER IS ENTITLED TO COPYRIGHT PROTECTION OF A

09:24:29   20   COMPILATION. A "COMPILATION" IS A WORK FORMED BY THE

09:24:33   21   COLLECTION AND ASSEMBLING OF PRE-EXISTING MATERIALS OR OF DATA

09:24:38   22   THAT ARE SELECTED, COORDINATED, OR ARRANGED IN SUCH A WAY THAT

09:24:43   23   THE RESULTING WORK AS A WHOLE CONSTITUTES AN ORIGINAL WORK OF

09:24:47   24   AUTHORSHIP.

09:24:48   25   THE OWNER OF A COMPILATION MAY ENFORCE THE RIGHT TO

09:24:53 1   EXCLUDE OTHERS IN AN ACTION FOR COPYRIGHT INFRINGEMENT.

09:24:59 2   THE CREATOR OF AN ORIGINAL WORK IS CALLED THE AUTHOR OF

09:25:05 3   THAT WORK. AN AUTHOR ORIGINATES OR MASTERMINDS THE ORIGINAL

09:25:09 4   WORK CONTROLLING THE WHOLE WORK'S CREATION AND CAUSING IT TO

09:25:12 5   COME INTO BEING.

09:25:13 6   A COPYRIGHT OWNER IS ENTITLED TO EXCLUDE OTHERS FROM

09:25:16 7   COPYING A WORK MADE FOR HIRE. A "WORK MADE FOR HIRE" IS ONE

09:25:19 8   THAT IS PREPARED BY AN EMPLOYEE AND IS WITHIN THE SCOPE OF

09:25:23 9   EMPLOYMENT.

09:25:31 10   A COPYRIGHT OWNER IS ENTITLED TO EXCLUDE OTHERS FROM

09:25:35 11   CREATING DERIVATIVE WORKS BASED ON THE OWNER'S COPYRIGHTED

09:25:39 12   WORK.

09:25:40 13   THE TERM DERIVATIVE WORK REFERS TO A WORK BASED ON ONE OR

09:25:43 14   MORE PRE-EXISTING WORKS, SUCH AS A TRANSLATION, MUSICAL

09:25:49 15   ARRANGEMENT, DRAMATIZATION, FICTIONALIZATION, MOTION PICTURE

09:25:53 16   VERSION, SOUND RECORDING, ART REPRODUCTION, ABRIDGEMENT,

09:25:57 17   CONDENSATION, OR ANY OTHER FORM IN WHICH A WORK MAY BE RECAST

09:26:02 18   OR ADAPTED.

09:26:04 19   ACCORDINGLY, THE OWNER OF A COPYRIGHTED WORK IS ENTITLED

09:26:08 20   TO EXCLUDE OTHERS FROM RECASTING OR ADAPTING THE COPYRIGHTED

09:26:12 21   WORK WITHOUT THE OWNER'S PERMISSION.

09:26:18 22   CISCO HAS THE BURDEN OF PROVING BY A PREPONDERANCE OF THE

09:26:20 23   EVIDENCE THAT ARISTA COPIED ORIGINAL, PROTECTED ELEMENTS FROM

09:26:23 24   CISCO'S COPYRIGHTED WORKS.

09:26:26 25   THERE ARE TWO WAYS THAT CISCO CAN MEET ITS BURDEN:

09:26:31 1   FIRST, CISCO MAY ESTABLISH ARISTA'S COPYING THROUGH DIRECT

09:26:37 2   EVIDENCE. AN EXAMPLE OF DIRECT EVIDENCE WOULD BE AN ADMISSION

09:26:42 3   BY ARISTA THAT PART OR ALL OF THE WORK WAS COPIED. DIRECT

09:26:49 4   EVIDENCE MAY ALSO BE THE CREDIBLE TESTIMONY OF A WITNESS WHO

09:26:53 5   SAW THE WORK BEING COPIED.

09:26:56 6   ALTERNATIVELY, CISCO MAY SHOW THAT ARISTA COPIED FROM

09:27:01 7   CISCO'S COPYRIGHTED WORKS, THROUGH INDIRECT EVIDENCE BY PROVING

09:27:05 8   BY A PREPONDERANCE OF THE EVIDENCE THAT ONE, ARISTA HAD ACCESS

09:27:10 9   TO CISCO'S COPYRIGHTED WORKS.

09:27:12 10   AND TWO, THERE IS VIRTUAL IDENTITY BETWEEN ARISTA'S WORKS

09:27:17 11   AND THE ORIGINAL PROTECTED ELEMENTS OF CISCO'S WORKS.

09:27:25 12   TO ESTABLISH INDIRECT EVIDENCE OF COPYING, CISCO MUST

09:27:29 13   PROVE BY A PREPONDERANCE OF THE EVIDENCE THAT ARISTA HAD ACCESS

09:27:32 14   TO CISCO'S COPYRIGHTED WORKS.

09:27:36 15   YOU MAY FIND THAT ARISTA HAD ACCESS TO CISCO'S WORKS IF

09:27:40 16   ARISTA HAD A REASONABLE OPPORTUNITY TO VIEW, READ, OR COPY

09:27:44 17   CISCO'S WORKS BEFORE ARISTA'S WORK WAS CREATED.

09:27:51 18   IF YOU FIND THAT ARISTA DID NOT HAVE ACCESS TO CISCO'S

09:27:54 19   WORKS, YOU MAY STILL FIND THAT ARISTA COPIED CISCO'S WORKS IF

09:27:59 20   THERE ARE STRIKING SIMILARITIES BETWEEN THE PROTECTABLE

09:28:02 21   ELEMENTS OF THE WORKS.

09:28:08 22   TO ESTABLISH INDIRECT EVIDENCE OF COPYING, CISCO MUST

09:28:12 23   PROVE VIRTUAL IDENTITY IN TWO STEPS. VIRTUAL IDENTITY MEANS

09:28:17 24   DIFFERING BY NO MORE THAN A TRIVIAL DEGREE.

09:28:22 25   FIRST, CISCO MUST PROVE THAT THERE IS VIRTUAL IDENTITY

09:28:28 1   BETWEEN THE ORIGINAL PROTECTED ELEMENTS OF CISCO'S COPYRIGHTED

09:28:31 2   WORKS AND THE CORRESPONDING ELEMENTS OF ARISTA'S WORKS THAT

09:28:36 3   CISCO CLAIMS ARISTA COPIED.

09:28:39 4   IN MAKING THIS COMPARISON, YOU MAY FIND ANY OF THE

09:28:43 5   FOLLOWING ELEMENTS OF CISCO'S WORKS PROTECTED AS A COMPILATION

09:28:51 6   IF YOU FIND THEY ARE ORIGINAL.

09:28:54 7   1. THE SELECTION AND ARRANGEMENT OF CISCO'S MULTIWORD

09:28:57 8   COMMAND LINE EXPRESSIONS.

09:28:59 9   2. THE SELECTION AND ARRANGEMENT OF CISCO'S MODES AND

09:29:02 10   PROMPTS.

09:29:02 11   3. THE COLLECTION OF CISCO'S SCREEN RESPONSES AND

09:29:07 12   OUTPUTS.

09:29:07 13   4. THE COLLECTION OF CISCO'S HELP DESCRIPTIONS.

09:29:11 14   5. CISCO'S USER INTERFACES AS A WHOLE AS COMPILATIONS OF

09:29:17 15   ELEMENTS 1 THROUGH 4.

09:29:19 16   6. EACH OF CISCO'S TECHNICAL MANUALS.

09:29:25 17   IN MAKING THIS COMPARISON, YOU SHOULD NOT CONSIDER THE

09:29:28 18   FOLLOWING ELEMENTS WHICH ARE NOT PROTECTABLE:

09:29:30 19   1. INDIVIDUAL WORDS USED IN ANY OF THE ASSERTED ELEMENTS.

09:29:36 20   2. ANY SINGLE MULTIWORD COMMAND.

09:29:38 21   3. THE IDEA OR METHOD OF GROUPING OR CLUSTERING COMMANDS

09:29:42 22   UNDER COMMON INITIAL WORDS, SUCH AS SHOW OR IP.

09:29:54 23   4. ANY COMMAND HIERARCHY.

09:29:56 24   5. SPECIFIC MODES AND SPECIFIC PROMPTS.

09:29:59 25   6. THE IDEA OF A SET PATH WAY THROUGH A SERIES OF MODES.

09:30:03 1   7.   THE IDEA OF MAKING CERTAIN COMMANDS AVAILABLE ONLY IN

09:30:07 2   CERTAIN MODES.

09:30:12 3   8.   USE OF COMMAND SYNTAX SUCH AS VERB, OBJECT,

09:30:17 4   PARAMETERS.

09:30:17 5   THE CHOICE -- I'M SORRY.

09:30:20 6   9.   THE CHOICE OF USING A TEXT-BASED USER INTERFACE.

09:30:24 7   10. THE IDEA OF USING MULTIWORD COMMAND EXPRESSIONS TO

09:30:28 8   MANAGE OR CONFIGURE A DEVICE.

09:30:31 9   11. THE FUNCTION OF ANY ASSERTED FEATURE.

09:30:36 10   12. THE USE OF "?" TO CALL UP HELP DESCRIPTIONS.

09:30:42 11   13. INDIVIDUAL HELP DESCRIPTION PHRASES.

09:30:50 12   14. COMMAND PREFIXES THAT THE USER INTERFACE AUTO

09:30:53 13   COMPLETES.

09:30:54 14   15. TAB COMPLETIONS.

09:30:57 15   IF CISCO PROVES VIRTUAL IDENTITY BETWEEN THE RELEVANT

09:31:03 16   PROTECTED ELEMENTS, IT MUST ALSO PROVE THAT AN ORDINARY,

09:31:07 17   REASONABLE OBSERVER WOULD FIND THE TOTAL CONCEPT AND FEEL OF

09:31:11 18   ITS COPYRIGHTED WORKS AS A WHOLE TO BE VIRTUALLY IDENTICAL TO

09:31:15 19   ARISTA'S CHALLENGED WORKS AS A WHOLE.

09:31:19 20   IN MAKING THAT COMPARISON, YOU SHOULD NOT CONSIDER

09:31:22 21   ELEMENTS THAT ARE NOT ORIGINAL OR ARE NOT PROTECTABLE.

09:31:27 22   AS I PREVIOUSLY INSTRUCTED YOU, CISCO'S WORKS AS A WHOLE

09:31:31 23   ARE ITS FOUR USER INTERFACES ASSOCIATED WITH ITS FOUR OPERATING

09:31:37 24   SYSTEMS, AS WELL AS EACH OF CISCO'S ASSERTED TECHNICAL MANUALS.

09:31:44 25   ARISTA'S WORKS, AS A WHOLE, ARE THE USER INTERFACES FOR

09:31:47   1   EACH OF THE ACCUSED ARISTA OPERATING SYSTEMS AS WELL AS EACH OF

09:31:52   2   ARISTA'S ACCUSED TECHNICAL MANUALS.

09:31:58   3   IF YOU CONCLUDE THAT CISCO HAS PROVEN, WHETHER BY DIRECT

09:32:03   4   OR INDIRECT EVIDENCE, THAT ARISTA COPIED ORIGINAL, PROTECTED

09:32:06   5   ELEMENTS OF CISCO'S WORKS, YOU MUST THEN DETERMINE WHETHER THAT

09:32:12   6   COPYING WAS GREATER THAN DE MINIMUS, THAT IS MORE THAN A

09:32:19   7   TRIVIAL AMOUNT OF CISCO'S WORKS AS A WHOLE.

09:32:22   8   IN MAKING THIS DETERMINATION, YOU SHOULD CONSIDER THE

09:32:25   9   QUALITATIVE AS WELL AS THE QUANTITATIVE SIGNIFICANCE OF THE

09:32:29   10 COPIED PORTION IN RELATION TO CISCO'S WORKS AS A WHOLE.

09:32:37   11   NOW I WILL EXPLAIN WHAT "FAIR USE" MEANS UNDER THE LAW.

09:32:42   12   FOR ARISTA'S FAIR USE DEFENSE.

09:32:45   13   ONE WHO IS NOT THE OWNER OF A COPYRIGHT MAY USE A

09:32:49   14 COPYRIGHTED WORK IN A REASONABLE WAY UNDER THE CIRCUMSTANCES

09:32:53   15 WITHOUT THE CONSENT OF THE COPYRIGHT OWNER IF IT WOULD ADVANCE

09:32:57   16 THE PUBLIC INTEREST. SUCH USE OF A COPYRIGHTED WORK IS CALLED

09:33:06   17 A FAIR USE.

09:33:07   18   THE OWNER OF A COPYRIGHT CANNOT PREVENT OTHERS FROM MAKING

09:33:11   19 A FAIR USE OF THE OWNER'S COPYRIGHTED WORKS.

09:33:14   20   IN DETERMINING WHETHER THE USE MADE OF THE WORK WAS FAIR,

09:33:18   21 YOU SHOULD CONSIDER THE FOLLOWING FACTORS.

09:33:21   22   1. THE PURPOSE AND CHARACTER OF THE USE.

09:33:25   23   2. THE NATURE OF THE COPYRIGHTED WORK.

09:33:28   24   3. THE AMOUNT AND SUBSTANTIALITY OF THE PORTION USED IN

09:33:34   25 RELATION TO THE COPYRIGHTED WORK AS A WHOLE.

09:33:38 1   4.   THE EFFECT OF THE USE UPON THE POTENTIAL MARKET FOR OR

09:33:42 2   VALUE OF THE COPYRIGHTED WORK.

09:33:45 3   IF YOU FIND THAT ARISTA HAS PROVED BY A PREPONDERANCE OF

09:33:48 4   THE EVIDENCE THAT IT MADE A FAIR USE OF CISCO'S WORK, YOUR

09:33:51 5   VERDICT SHOULD BE FOR ARISTA.

09:34:01 6   THE FIRST STATUTORY FACTOR CONCERNS THE PURPOSE AND

09:34:03 7   CHARACTER OF THE ACCUSED USE.

09:34:05 8   THIS FACTOR INCLUDES THREE ISSUES.   WHETHER AND TO WHAT

09:34:11 9   EXTENT THE ACCUSED USE SERVES A COMMERCIAL PURPOSE, WHICH

09:34:15 10 WEIGHS AGAINST FAIR USE, VERSUS A NONPROFIT EDUCATIONAL

09:34:19 11 PURPOSE, WHICH WEIGHS IN FAVOR OF FAIR USE;

09:34:23 12   AND TWO, WHETHER AND TO WHAT EXTENT THE ACCUSED WORK IS

09:34:29 13 TRANSFORMATIVE, WHICH SUPPORTS FAIR USE.

09:34:32 14   A USE IS TRANSFORMATIVE IF IT ADDS SOMETHING NEW WITH A

09:34:38 15 FURTHER PURPOSE OR DIFFERENT CHARGE, ALTERING THE FIRST USE

09:34:42 16 WITH NEW EXPRESSION, MEANING, OR MESSAGE, RATHER THAN MERELY

09:34:47 17 SUPERSEDING THE OBJECTS OF THE ORIGINAL CREATION.

09:34:52 18   NEW WORKS HAVE BEEN FOUND TRANSFORMATIVE WHEN THEY USE

09:34:56 19 COPYRIGHTED MATERIAL FOR PURPOSES DISTINCT FROM THE PURPOSE OF

09:35:00 20 THE ORIGINAL MATERIAL.

09:35:02 21   A USE IS CONSIDERED TRANSFORMATIVE ONLY WHEN THE DEFENDANT

09:35:07 22 CHANGES THE PLAINTIFF'S COPYRIGHTED WORK OR USES COPYRIGHTED

09:35:11 23 ELEMENTS FOR A DIFFERENT PURPOSE, SUCH AS THE ORIGINAL WORK IS

09:35:16 24 TRANSFORMED INTO A NEW CREATION.

09:35:19 25   IN EVALUATING THE FIRST STATUTORY FACTOR, THE EXTENT OF

09:35:23 1   THE COMMERCIAL NATURE OF THE ACCUSED WORK MUST ALSO BE

09:35:26 2   CONSIDERED. COMMERCIAL USE WEIGHS AGAINST A FINDING OF FAIR

09:35:31 3   USE. HOWEVER, THE MORE TRANSFORMATIVE THE NEW WORK, THE LESS

09:35:36 4   WILL BE THE SIGNIFICANCE OF OTHER FACTORS, LIKE COMMERCIALISM,

09:35:41 5   THAT MAY WEIGH AGAINST A FINDING OF FAIR USE.

09:35:45 6   FINALLY, ALSO RELEVANT TO THE FIRST STATUTORY FACTOR IS

09:35:50 7   THE PROPRIETY OF ARISTA'S CONDUCT.

09:35:56 8   THE SECOND STATUTORY FACTOR IS THE NATURE OF THE

09:35:59 9   COPYRIGHTED WORK. THIS FACTOR CONSIDERS THE EXTENT TO WHICH

09:36:03 10   THE WORK IS INFORMATIONAL OR CREATIVE. THIS FACTOR WEIGHS

09:36:07 11   AGAINST FAIR USE IF THE WORK IS PURELY CREATIVE AND IT WEIGHS

09:36:12 12   IN FAVOR OF FAIR USE IF THE WORK IS PURELY INFORMATIONAL OR

09:36:16 13   FUNCTIONAL.

09:36:17 14   BUT LIKE ALL THINGS IN LIFE, MOST CASES FALL ON A SPECTRUM

09:36:22 15   IN BETWEEN INFORMATIONAL AND CREATIVE. YOU MUST CONSIDER WHERE

09:36:26 16   ON THIS SPECTRUM THE WORKS IN THIS CASE FALL.

09:36:33 17   THE THIRD STATUTORY FACTOR IS THE AMOUNT AND

09:36:37 18   SUBSTANTIALITY OF THE PORTION USED IN RELATIONSHIP TO THE

09:36:41 19   COPYRIGHTED WORK AS A WHOLE, WHICH CONCERNS HOW MUCH OF THE

09:36:47 20   OVERALL COPYRIGHTED WORK WAS USED BY THE ACCUSED INFRINGER.

09:36:51 21   ANALYSIS OF THIS FACTOR IS VIEWED IN THE CONTEXT OF

09:36:55 22   CISCO'S COPYRIGHTED WORKS, WHICH ARE THE FOUR USER INTERFACES

09:37:00 23   OF IOS, IOS XR, IOS XE AND NX-OS. THE FACT, IF TRUE, THAT A

09:37:09 24   SUBSTANTIAL PORTION OF AN INFRINGING WORK WAS COPIED VERBATIM,

09:37:13 25   IS EVIDENCE OF THE QUALITATIVE VALUE OF THE COPIED MATERIAL,

09:37:17 1   BOTH TO THE ORIGINATOR AND TO WHOEVER SEEKS TO PROFIT FROM

09:37:22 2   MARKETING SOMEONE ELSE'S COPYRIGHTED WORK.

09:37:26 3   WHOLESALE COPYING DOES NOT PRECLUDE FAIR USE PER SE, BUT

09:37:30 4   IT MILITATES AGAINST A FINDING OF FAIR USE. EVEN A SMALL PART

09:37:35 5   MAY BE QUALITATIVELY THE MOST IMPORTANT PART OF THE WORK.

09:37:40 6   IF, HOWEVER, THE SECONDARY USER ONLY COPIES AS MUCH AS IS

09:37:45 7   NECESSARY FOR A TRANSFORMATIVE USE, THEN THIS FACTOR WILL NOT

09:37:49 8   WEIGH AGAINST HIM OR HER. THE EXTENT OF PERMISSIBLE COPYING

09:37:54 9   VARIES WITH THE PURPOSE AND CHARACTER OF THE USE, WHICH RELATES

09:37:58 10   BACK TO THE FIRST FACTOR.

09:38:01 11   IN ASSESSING THIS THIRD FACTOR, BOTH THE QUANTITY OF THE

09:38:08 12   MATERIAL USED OR THE QUALITY OR IMPORTANCE OF THE MATERIAL

09:38:10 13   SHOULD BE CONSIDERED.

09:38:14 14   THE FOURTH STATUTORY FACTOR IS THE EFFECT OF THE ACCUSED

09:38:19 15   INFRINGER'S USE ON THE POTENTIAL MARKET FOR OR VALUE OF THE

09:38:23 16   COPYRIGHTED WORK. THIS FACTOR MILITATES AGAINST FAIR USE IF

09:38:28 17   THE ACCUSED USE MATERIALLY IMPAIRS THE COPYRIGHTABILITY OR

09:38:41 18   VALUE OF THE COPYRIGHTED WORK.

09:38:43 19   THIS IS THE MOST IMPORTANT FACTOR, BUT IT MUST BE WEIGHED

09:38:45 20   WITH ALL THE OTHER FACTORS AND IS IT NOT NECESSARILY

09:38:50 21   DISPOSITIVE.

09:38:51 22   THIS FACTOR CONSIDERS WHETHER THE ACCUSED WORK IS OFFERED

09:38:53 23   OR USED AS A SUBSTITUTE FOR THE ORIGINAL COPYRIGHTED WORK.

09:38:58 24   THIS FACTOR CONSIDERS NOT ONLY THE EXTENT OF ANY MARKET

09:39:01 25   HARM CAUSED BY THE ACCUSED INFRINGER'S ACTIONS BUT ALSO WHETHER

09:39:04 1   UNRESTRICTED AND WIDESPREAD USE OF THE COPYRIGHTED MATERIALS OF

09:39:08 2   THE SORT ENGAGED IN BY THE ACCUSED INFRINGER WOULD RESULT IN A

09:39:12 3   SUBSTANTIALLY ADVERSE IMPACT ON THE POTENTIAL MARKET FOR THE

09:39:20 4   COPYRIGHTED WORK.

09:39:22 5   IF THE USE OF THE COPYRIGHTED MATERIALS IS TRANSFORMATIVE,

09:39:27 6   MARKET SUBSTITUTION IS AT LEAST LESS CERTAIN, AND MARKET HARM

09:39:32 7   MAY NOT BE PRESUMED.

09:39:37 8   YOU MUST CONSIDER EACH OF THE FACTORS I HAVE JUST

09:39:39 9   IDENTIFIED TO DETERMINE WHETHER OR NOT ARISTA HAS CARRIED ITS

09:39:43 10   BURDEN OF PROVING THAT ARISTA'S USE OF CISCO'S COPYRIGHTED WORK

09:39:48 11   IS FAIR USE. NO ONE OF THESE FACTORS IS DETERMINATIVE OF THE

09:39:55 12   ISSUE OF FAIR USE BY ITSELF. SOME FACTORS MAY WEIGH IN FAVOR

09:39:59 13   OF FINDING FAIR USE AND SOME MAY WEIGH AGAINST A FINDING OF

09:40:02 14   FAIR USE.

09:40:03 15   IN ADDITION, EACH FACTOR IS NOT ALWAYS ENTITLED TO EQUAL

09:40:08 16   WEIGHT. THIS IS NOT A COUNTING EXERCISE WHERE THREE FACTORS IN

09:40:13 17   FAVOR OF FAIR USE ALWAYS OUTWEIGH ONE FACTOR AGAINST FAIR USE.

09:40:19 18   MOREOVER, THESE ARE NOT THE ONLY FACTORS YOU MAY CONSIDER.

09:40:23 19   IN DECIDING WHETHER TO CONSIDER ANY OTHER FACTORS BASED ON THE

09:40:31 20   EVIDENCE AND CIRCUMSTANCES PRESENTED TO YOU IN THIS CASE, YOU

09:40:33 21   SHOULD BE GUIDED BY THE POLICY UNDERLYING THE FAIR USE

09:40:37 22   DOCTRINE, WHICH IS TO PERMIT LIMITED COPYING FROM COPYRIGHTED

09:40:40 23   WORKS IN SPECIFIC CIRCUMSTANCES THAT AUTHORS REASONABLY EXPECT

09:40:44 24   AND THAT ALLOW PRODUCTIVE USE OF WORK WITHOUT UNFAIRLY

09:40:53 25   UNDERMINING THE PROTECTION AFFORDED BY COPYRIGHT LAW.

09:41:00 1   AFFIRMATIVE DEFENSE OF MERGER.

09:41:02 2   TO SHOW THAT CISCO'S COPYRIGHTED WORKS ARE SUBJECT TO

09:41:06 3   MERGER, ARISTA MUST SHOW THAT AT THE TIME CISCO CREATED THE

09:41:11 4   WORKS, CISCO HAD ONLY ONE WAY OR VERY FEW WAYS TO EXPRESS THE

09:41:17 5   IDEAS UNDERLYING THE ELEMENTS OF CISCO'S COPYRIGHTED USER

09:41:21 6   INTERFACES OR TECHNICAL MANUALS. MATERIAL IN AN ORIGINAL WORK,

09:41:27 7   EVEN MATERIAL THAT SERVES A FUNCTION, IS NOT SUBJECT TO MERGER

09:41:33 8   AS LONG AS THE AUTHOR HAD MORE THAN A FEW WAYS TO EXPRESS THE

09:41:37 9   UNDERLYING IDEA.

09:41:38 10   ARISTA HAS THE BURDEN OF PROVING THIS DEFENSE BY A

09:41:41 11 PREPONDERANCE OF THE EVIDENCE.

09:41:48 12   AFFIRMATIVE DEFENSE OF SCÈNES À FAIRE.

09:41:50 13   SCÈNES À FAIRE IS AN AFFIRMATIVE DEFENSE TO COPYRIGHT

09:41:54 14 INFRINGEMENT.

09:41:56 15   TO SHOW THAT PORTIONS OF CISCO'S USER INTERFACES ARE

09:42:00 16 SCÈNES À FAIRE MATERIAL, ARISTA MUST SHOW THAT AT THE TIME

09:42:03 17 CISCO CREATED THE USER INTERFACES, NOT AT THE TIME OF ANY

09:42:07 18 COPYING, EXTERNAL FACTORS OTHER THAN CISCO'S CREATIVITY

09:42:13 19 DICTATED THAT CISCO SELECT, ARRANGE, ORGANIZE AND DESIGN ITS

09:42:19 20 ORIGINAL FEATURES IN A MANNER IT DID.

09:42:21 21   THE SCÈNES À FAIRE DOCTRINE DEPENDS UPON THE CIRCUMSTANCES

09:42:25 22 PRESENTED TO THE CREATOR AT THE TIME OF CREATION, NOT THE

09:42:29 23 CIRCUMSTANCES PRESENTED TO THE COPIER AT THE TIME IT COPIED.

09:42:34 24   ARISTA HAS THE BURDEN OF PROVING THIS DEFENSE BY A

09:42:37 25 PREPONDERANCE OF THE EVIDENCE.

09:42:40 1   AFFIRMATIVE DEFENSE OF COPYRIGHT MISUSE.

09:42:43 2   ARISTA CLAIMS IT IS NOT LIABLE FOR COPYRIGHT INFRINGEMENT

09:42:48 3   BECAUSE CISCO MISUSED ITS COPYRIGHTS.

09:42:51 4   WHILE THE COPYRIGHT ACT GIVES A COPYRIGHT OWNER A LIMITED

09:42:56 5   MONOPOLY IN A COPYRIGHTED WORK, THE OWNER'S ATTEMPTS TO EXTEND

09:42:59 6   THE SCOPE OF THIS MONOPOLY MAY NOT, UNDER CERTAIN

09:43:04 7   CIRCUMSTANCES, CONSTITUTE MISUSE.

09:43:07 8   I'M SORRY, LET ME REREAD THAT.

09:43:10 9   WHILE THE COPYRIGHT ACT GIVES A COPYRIGHT OWNER A LIMITED

09:43:12 10   MONOPOLY IN A COPYRIGHTED WORK, THE OWNER'S ATTEMPT TO EXTEND

09:43:17 11   THE SCOPE OF THIS MONOPOLY MAY, UNDER CERTAIN CIRCUMSTANCES,

09:43:21 12   CONSTITUTE MISUSE.

09:43:23 13   IF YOU FIND THAT CISCO MISUSED ITS COPYRIGHTS, IT CANNOT

09:43:27 14   ASSERT AN INFRINGEMENT CLAIM AGAINST ARISTA.

09:43:31 15   TO PREVAIL UPON ITS CLAIM THAT CISCO MISUSED ITS

09:43:36 16   COPYRIGHTS, ARISTA MUST PROVE THAT CISCO ATTEMPTED TO USE THE

09:43:41 17   EXISTENCE OF ITS COPYRIGHTS TO PREVENT ARISTA FROM USING

09:43:46 18   UNPROTECTED ELEMENTS OF THE COPYRIGHTED WORK, OR TO PREVENT

09:43:54 19   ARISTA FROM UNDER TAKING ACTIVITY SAVE GUARDED BY PUBLIC

09:43:57 20   POLICY, SUCH AS THE POLICIES SUPPORTING FAIR USE.

09:44:00 21   ARISTA HAS THE BURDEN OF PROOF TO ESTABLISH CISCO'S

09:44:02 22   COPYRIGHT MISUSE BY A PREPONDERANCE OF THE EVIDENCE.

09:44:08 23   AFFIRMATIVE DEFENSE OF ABANDONMENT.

09:44:11 24   ARISTA CONTENDS THAT A COPYRIGHT DOES NOT EXIST IN CISCO'S

09:44:15 25   WORKS BECAUSE CISCO ABANDONED THE COPYRIGHTS. CISCO CANNOT

09:44:20   1   CLAIM OWNERSHIP OF THE COPYRIGHT IF IT WAS ABANDONED.

09:44:24   2   IN ORDER TO SHOW ABANDONMENT, ARISTA HAS THE BURDEN OF

09:44:28   3   PROVING EACH OF THE FOLLOWING BY A PREPONDERANCE OF THE

09:44:32   4   EVIDENCE:

09:44:32   5   1. CISCO INTENDED TO SURRENDER RIGHTS IN THE WORK.

09:44:37   6   2. AN ACT BY CISCO EVIDENCING THAT INTENT.

09:44:41   7   MERE INACTION DOES NOT CONSTITUTE ABANDONMENT OF THE

09:44:45   8   COPYRIGHT. HOWEVER, THIS MAY BE A FACTOR FOR YOU TO CONSIDER

09:44:49   9   IN DETERMINING WHETHER CISCO HAS ABANDONED THE COPYRIGHT.

09:44:58 10   IT IS THE DUTY OF THE COURT TO INSTRUCT YOU ABOUT THE

09:45:01 11   MEASURE OF DAMAGES. BY INSTRUCTING YOU ON DAMAGES, THE COURT

09:45:05 12   DOES NOT MEAN TO SUGGEST FOR WHICH PARTY YOUR VERDICT SHOULD BE

09:45:10 13   RENDERED.

09:45:11 14   IF YOU FIND FOR CISCO ON ITS COPYRIGHT INFRINGEMENT CLAIM,

09:45:16 15   YOU MUST DETERMINE CISCO'S DAMAGES.

09:45:19 16   CISCO IS ENTITLED TO RECOVER THE ACTUAL DAMAGES SUFFERED

09:45:22 17   AS A RESULT OF THE INFRINGEMENT. IN ADDITION, CISCO IS ALSO

09:45:28 18   ENTITLED TO RECOVER ANY OF ARISTA'S PROFITS ATTRIBUTABLE TO THE

09:45:33 19   INFRINGEMENT, TO THE EXTENT YOU DID NOT ALREADY ACCOUNT FOR

09:45:38 20   THOSE PROFITS IN DETERMINING CISCO'S ACTUAL DAMAGES.

09:45:42 21   CISCO MUST PROVE ITS DAMAGES BY A PREPONDERANCE OF THE

09:45:47 22   EVIDENCE. IT IS FOR YOU TO DETERMINE WHAT DAMAGES, IF ANY,

09:45:51 23   HAVE BEEN PROVED. YOUR AWARD MUST BE BASED UPON EVIDENCE AND

09:45:55 24   NOT UPON SPECULATION, GUESSWORK OR CONJECTURE.

09:46:05 25   CISCO IS ENTITLED TO RECOVER THE ACTUAL DAMAGES SUFFERED

09:46:08 1   AS A RESULT OF ARISTA'S INFRINGEMENT. ACTUAL DAMAGES MEANS THE

09:46:13 2   AMOUNT OF MONEY ADEQUATE TO COMPENSATE THE COPYRIGHT OWNER FOR

09:46:17 3   THE REDUCTION IN THE FAIR MARKET VALUE OF THE COPYRIGHTED WORK

09:46:23 4   CAUSED BY THE INFRINGEMENT.

09:46:25 5   ACTUAL DAMAGES MAY BE MEASURED BY THE PROFITS OF THE

09:46:29 6   COPYRIGHT OWNER LOST DUE TO THE INFRINGEMENT REFERRED TO AS

09:46:34 7   LOST PROFITS.

09:46:35 8   IN THIS CASE, ACTUAL DAMAGES IN THE FORM OF LOST PROFITS

09:46:38 9   ARE THE AMOUNT THAT CISCO WOULD HAVE EARNED BUT FOR ARISTA'S

09:46:42 10 INFRINGEMENT.

09:46:47 11   IN ADDITION TO ACTUAL DAMAGES, CISCO IS ENTITLED TO ANY

09:46:51 12 PROFITS OF ARISTA'S ATTRIBUTABLE TO THE INFRINGEMENT. YOU MAY

09:46:58 13 NOT INCLUDE IN AN AWARD OF PROFITS, ANY AMOUNT THAT YOU TOOK

09:47:03 14 INTO ACCOUNT IN DETERMINING ACTUAL DAMAGES. YOU MAY MAKE AN

09:47:08 15 AWARD OF ARISTA'S PROFITS ONLY IF YOU FIND THAT CISCO SHOWED A

09:47:11 16 CAUSAL RELATIONSHIP BETWEEN THE PROFITS IT SEEKS AND THE

09:47:17 17 COPYRIGHT INFRINGEMENT.

09:47:19 18   IN THIS CASE, BECAUSE CISCO SEEKS ONLY DIRECT PROFITS,

09:47:24 19 CISCO MAY SATISFY ITS BURDEN BY SHOWING THAT THE PROFITS IT

09:47:28 20 SEEKS TO RECOVER DERIVED DIRECTLY FROM THE SALES OF THE

09:47:33 21 INFRINGING PRODUCTS.

09:47:35 22   ARISTA'S GROSS REVENUE IS ALL OF ARISTA'S REVENUE DIRECTLY

09:47:39 23 FROM THE SALE OF ANY PRODUCTS CONTAINING OR USING CISCO'S

09:47:44 24 COPYRIGHTED WORKS.

09:47:46 25   CISCO HAS THE BURDEN OF PROVING ARISTA'S GROSS REVENUE BY

09:47:49 1   A PREPONDERANCE OF THE EVIDENCE.

09:47:52 2   IF CISCO ESTABLISHES A CAUSAL RELATIONSHIP BETWEEN THE

09:47:56 3   PROFITS IT SEEKS AND THE INFRINGEMENT, THE BURDEN SHIFTS TO

09:48:00 4   ARISTA TO PROVE DEDUCTIBLE EXPENSES AND THE PORTION OF ITS

09:48:04 5   PROFITS ATTRIBUTABLE TO FACTORS OTHER THAN INFRINGING THE

09:48:08 6   COPYRIGHTED WORK.

09:48:10 7   DEDUCTIBLE EXPENSES ARE THE PORTION OF ARISTA'S OPERATING

09:48:15 8   COSTS, OVER HEAD COSTS, AND PRODUCTION COSTS, INCURRED BY

09:48:19 9   ARISTA IN PRODUCING ARISTA'S CROSS REVENUE FROM THE INFRINGING

09:48:23 10   PRODUCTS.

09:48:24 11   ARISTA HAS THE BURDEN OF PROVING ITS EXPENSES BY A

09:48:28 12   PREPONDERANCE OF THE EVIDENCE.

09:48:30 13   UNLESS YOU FIND THAT A PORTION OF THE PROFITS FROM THE

09:48:34 14   SALE OF A PRODUCT CONTAINING OR USING CISCO'S COPYRIGHTED WORKS

09:48:37 15   IS ATTRIBUTABLE TO FACTORS OTHER THAN THE COPYRIGHTED WORKS,

09:48:43 16   ALL OF THE PROFIT IS TO BE ATTRIBUTED TO THE INFRINGEMENT.

09:48:47 17   ARISTA'S PROFITS DO NOT NEED TO BE CALCULATED WITH

09:48:51 18   MATHEMATICAL OR ABSOLUTE EXACTNESS BY EITHER CISCO OR ARISTA.

09:48:56 19   THE LAW REQUIRES ONLY A REASONABLE APPROXIMATION OF AN

09:49:00 20   INFRINGER'S PROFITS AS A BASIS FOR DETERMINING THE PROPER

09:49:04 21   AMOUNT OF DAMAGES.

09:49:13 22   I'M GOING TO MOVE ON TO THE PATENT CLAIM.

09:49:16 23   BEFORE YOU DECIDE WHETHER ARISTA HAS INFRINGED THE CLAIMS

09:49:19 24   OF THE PATENT, YOU WILL NEED TO UNDERSTAND THE PATENT CLAIMS.

09:49:24 25   THE PATENT CLAIMS ARE NUMBERED SENTENCES AT THE END OF THE

09:49:27   1   PATENT THAT DESCRIBE THE BOUNDARIES OF THE PATENT'S PROTECTION.

09:49:33   2   IT IS MY JOB AS JUDGE TO EXPLAIN TO YOU THE MEANING OF ANY

09:49:38   3   LANGUAGE IN THE CLAIMS THAT NEEDS INTERPRETATION.

09:49:42   4   I HAVE INTERPRETED THE MEANING OF SOME OF THE LANGUAGE IN

09:49:45   5   THE PATENT CLAIMS INVOLVED IN THIS CASE. YOU MUST ACCEPT THOSE

09:49:49   6   INTERPRETATIONS AS CORRECT.

09:49:52   7   THESE INTERPRETATIONS WERE HANDED TO YOU AT THE START OF

09:49:55   8   THE TRIAL. FOR ANY CLAIM TERM FOR WHICH I HAVE NOT PROVIDED

09:50:00   9   YOU A DEFINITION, YOU SHOULD APPLY THE PLAIN AND ORDINARY

09:50:05   10   MEANING OF THAT AS UNDERSTOOD BY ONE OF ORDINARY SKILL IN THE

09:50:10   11   ART.

09:50:11   12   MY INTERPRETATION OF THE LANGUAGE SHOULD NOT BE TAKEN AS

09:50:14   13   AN INDICATION THAT I HAVE A VIEW REGARDING THE ISSUE OF

09:50:18   14   INFRINGEMENT. THE DECISION REGARDING INFRINGEMENT IS YOURS TO

09:50:22   15   MAKE.

09:50:23   16   I HAVE MADE THE FOLLOWING CLAIM INTERPRETATIONS OF TERMS

09:50:27   17   FOUND IN THE ASSERTED CLAIMS.

09:50:32   18   FOR THE PHRASE "MANAGEMENT PROGRAMS" IN THE '526 PATENT

09:50:35   19   CLAIMS, I INSTRUCT YOU TO INTERPRET THAT TO MEAN THE FOLLOWING:

09:50:40   20   "TOOLS OR AGENTS CONFIGURED TO EXECUTE USER-DIRECTED

09:50:45   21   COMMANDS HAVING THEIR OWN RESPECTIVE COMMAND FORMATS THAT

09:50:50   22   PROVIDE MANAGEMENT FUNCTIONS."

09:50:54   23   FOR THE PHRASE "GENERIC COMMAND" IN THE '526 PATENT

09:50:57   24   CLAIMS, I INSTRUCT YOU TO INTERPRET THAT TO MEAN THE FOLLOWING:

09:51:02   25   "COMMAND THAT PROVIDES AN ABSTRACTION OF THE TOOL-SPECIFIC

09:51:07   1   COMMAND FORMATS AND SYNTAX, ENABLING A USER TO ISSUE THE

09:51:11   2   COMMAND BASED ON THE RELATIVE FUNCTIONS AS OPPOSED TO THE

09:51:14   3   SPECIFIC SYNTAX FOR A CORRESPONDING TOOL."

09:51:19   4   FOR THE PHRASE "COMMAND PARSE TREE" IN THE '526 PATENT

09:51:24   5   CLAIMS, I INSTRUCT YOU TO INTERPRET THAT TO MEAN THE FOLLOWING.

09:51:29   6   "A HIERARCHICAL DATA STRUCTURE."

09:51:32   7   THE FOLLOWING PHRASE APPEARS IN CERTAIN CLAIMS OF THE '526

09:51:41   8   PATENT. "THE COMMAND PARSE TREE HAVING ELEMENTS EACH

09:51:43   9   SPECIFYING AT LEAST ONE CORRESPONDING GENERIC COMMAND COMPONENT

09:51:47 10   AND A CORRESPONDING AT LEAST ONE COMMAND ACTION VALUE."

09:51:52 11   WITHIN THAT PHRASE, FOR THE TERM "COMMAND ACTION VALUE," I

09:51:56 12   INSTRUCT YOU TO INTERPRET THAT TO MEAN, "A VALUE THAT

09:51:58 13   IDENTIFIES A PRESCRIBED COMMAND."

09:52:06 14   FOR THE LARGER PHRASE, I INSTRUCT YOU TO INTERPRET IT TO

09:52:09 15   MEAN "THE COMMAND PARSE TREE, HAVING ELEMENTS SUCH THAT EACH

09:52:13 16   ELEMENT SPECIFIES AT LEAST ONE COMMAND ACTION VALUE FOR EACH

09:52:19 17   GENERIC COMMAND COMPONENT."

09:52:25 18   I WILL NOW INSTRUCT YOU ON THE RULES YOU MUST FOLLOW IN

09:52:27 19   DECIDING WHETHER CISCO HAS PROVEN THAT ARISTA HAS INFRINGED ONE

09:52:30 20   OR MORE OF THE ASSERTED CLAIMS OF THE '526 PATENT.

09:52:35 21   TO PROVE INFRINGEMENT OF ANY CLAIM, CISCO MUST PERSUADE

09:52:38 22   YOU THAT IT IS MORE LIKELY THAN NOT THAT ARISTA HAS INFRINGED

09:52:48 23   THAT CLAIM.

09:52:50 24   A PATENT'S CLAIMS DEFINE WHAT IS COVERED BY THE PATENT. A

09:52:52 25   PRODUCT OR METHOD DIRECTLY INFRINGES A PATENT IF IT IS COVERED

09:52:56 1   BY AT LEAST ONE CLAIM OF THE PATENT.

09:52:59 2   DECIDING WHETHER A CLAIM HAS BEEN DIRECTLY INFRINGED IS A

09:53:02 3   TWO-STEP PROCESS. THE FIRST STEP IS TO DECIDE THE MEANING OF

09:53:06 4   THE PATENT CLAIM. I HAVE ALREADY MADE THIS DECISION AND I HAVE

09:53:11 5   ALREADY INSTRUCTED YOU AS TO THE MEANING OF THE ASSERTED PATENT

09:53:15 6   CLAIMS.

09:53:16 7   THE SECOND STEP IS TO DECIDE WHETHER ARISTA HAS MADE,

09:53:21 8   USED, SOLD, OFFERED FOR SALE, OR IMPORTED WITHIN THE UNITED

09:53:25 9   STATES, A PRODUCT OR SERVICE COVERED BY A CLAIM OF THE '526

09:53:29 10   PATENT. IF IT HAS, IT INFRINGES. YOU, THE JURY, MAKE THIS

09:53:33 11   DECISION.

09:53:36 12   YOU MUST DECIDE EACH OF THE ASSERTED CLAIMS OF THE PATENT

09:53:39 13   INDIVIDUALLY, AND DECIDE WHETHER ARISTA'S PRODUCTS OR SERVICES

09:53:43 14   INFRINGE THAT CLAIM. YOU HAVE HEARD EVIDENCE ABOUT BOTH

09:53:47 15   CISCO'S COMMERCIAL PRODUCTS AND ARISTA'S ACCUSED PRODUCTS AND

09:53:50 16   SERVICES. HOWEVER, IN DECIDING THE ISSUE OF INFRINGEMENT, YOU

09:53:54 17   MAY NOT COMPARE ARISTA'S ACCUSED PRODUCTS AND SERVICES TO

09:53:58 18   CISCO'S COMMERCIAL PRODUCTS.

09:54:01 19   RATHER, YOU MUST COMPARE ARISTA'S ACCUSED PRODUCTS AND

09:54:05 20   SERVICES TO THE CLAIMS OF THE '526 PATENT WHEN MAKING YOUR

09:54:10 21   DECISION REGARDING INFRINGEMENT.

09:54:11 22   WHETHER OR NOT ARISTA KNEW ITS PRODUCTS OR SERVICES

09:54:14 23   INFRINGED OR EVEN KNEW OF THE PATENT DOES NOT MATTER IN

09:54:17 24   DETERMINING DIRECT INFRINGEMENT.

09:54:24 25   TO DECIDE WHETHER ARISTA'S PRODUCTS AND SERVICES LITERALLY

09:54:27 1   INFRINGE A CLAIM OF THE '526 PATENT, YOU MUST COMPARE THAT

09:54:33 2   PRODUCT OR SERVICES WITH THE PATENT CLAIM AND DETERMINE WHETHER

09:54:37 3   EVERY REQUIREMENT OF THE CLAIM IS INCLUDED IN THAT PRODUCT OR

09:54:41 4   SERVICE.

09:54:42 5   IF SO, ARISTA'S PRODUCT OR SERVICE LITERALLY INFRINGES

09:54:47 6   THAT CLAIM. IF HOWEVER, ARISTA'S PRODUCT OR SERVICE DOES NOT

09:54:51 7   HAVE EVERY REQUIREMENT OF THE PATENT CLAIM, ARISTA'S PRODUCT OR

09:54:56 8   SERVICE DOES NOT LITERALLY INFRINGE THAT CLAIM.

09:55:00 9   YOU MUST DECIDE LITERAL INFRINGEMENT FOR EACH ASSERTED

09:55:03 10   CLAIM SEPARATELY.

09:55:05 11   IF THE PATENT CLAIM USES THE TERM COMPRISING, THAT PATENT

09:55:11 12   CLAIM IS TO BE UNDERSTOOD AS AN "OPEN CLAIM." AN OPEN CLAIM IS

09:55:17 13   INFRINGED AS LONG AS EVERY REQUIREMENT IN THE CLAIM IS PRESENT

09:55:20 14   IN ARISTA'S PRODUCT OR SERVICE.

09:55:22 15   THE FACT THAT ARISTA'S PRODUCT OR SERVICE ALSO INCLUDES

09:55:26 16   OTHER PARTS OR STEPS, WILL NOT AVOID INFRINGEMENT. AS LONG AS

09:55:31 17   IT HAS EVERY REQUIREMENT OF THE PATENT CLAIM.

09:55:38 18   CISCO ALSO CONTENDS THAT ARISTA HAS CONTRIBUTED TO

09:55:43 19   INFRINGEMENT BY ANOTHER. CONTRIBUTORY INFRINGEMENT MAY ARISE

09:55:50 20   WHEN SOMEONE SUPPLIES SOMETHING THAT IS USED TO INFRINGE ONE OR

09:55:53 21   MORE OF THE PATENT CLAIMS. CONTRIBUTORY INFRINGEMENT IS A FORM

09:55:57 22   OF INDIRECT INFRINGEMENT.

09:56:01 23   IN ORDER FOR THERE TO BE CONTRIBUTORY INFRINGEMENT BY

09:56:04 24   ARISTA, SOMEONE OTHER THAN ARISTA MUST DIRECTLY INFRINGE A

09:56:07 25   CLAIM OF THE '526 PATENT. IF THERE IS NO DIRECT INFRINGEMENT

09:56:11 1   BY ANYONE, THERE CAN BE NO CONTRIBUTORY INFRINGEMENT.

09:56:16 2   IF YOU FIND SOMEONE HAS DIRECTLY INFRINGED THE '526

09:56:19 3   PATENT, THEN CONTRIBUTORY INFRINGEMENT EXISTS IF:

09:56:22 4   1.   ARISTA SUPPLIED AN IMPORTANT COMPONENT OF THE

09:56:31 5   INFRINGING PART OF THE PRODUCT OR SERVICE.

09:56:33 6   2.   THE COMPONENT IS NOT A COMMON COMPONENT SUITABLE FOR

09:56:39 7   NONINFRINGING USE.

09:56:40 8   3.   ARISTA SUPPLIED THE COMPONENT WITH THE KNOWLEDGE OF

09:56:44 9   THE '526 PATENT AND KNOWLEDGE THAT THE COMPONENT WAS ESPECIALLY

09:56:48 10 MADE OR ADAPTED FOR USE IN AN INFRINGING MANNER.

09:56:53 11   A COMMON COMPONENT SUITABLE FOR NONINFRINGING USE IS A

09:56:57 12 COMPONENT THAT HAS USES OTHER THAN AS A COMPONENT OF THE

09:57:07 13 PATENTED PRODUCT OR OTHER THAN IN THE PATENTED METHOD, AND

09:57:09 14 THOSE OTHER USES WERE NOT OCCASIONAL, FAR-FETCHED, IMPRACTICAL

09:57:14 15 EXPERIMENTAL OR HYPOTHETICAL.

09:57:17 16   CISCO ARGUES THAT ARISTA HAS ACTIVELY INDUCED ANOTHER TO

09:57:20 17 INFRINGE THE '526 PATENT. IN ORDER FOR ARISTA TO HAVE INDUCED

09:57:24 18 INFRINGEMENT, ARISTA MUST HAVE INDUCED ANOTHER TO DIRECTLY

09:57:28 19 INFRINGE A CLAIM OF THE '526 PATENT.

09:57:33 20   IF THERE IS NO DIRECT INFRINGEMENT BY ANYONE, THERE CAN BE

09:57:37 21 NO INDUCED INFRINGEMENT. INDUCED INFRINGEMENT IS A FORM OF

09:57:40 22 INDIRECT INFRINGEMENT.

09:57:41 23   IN ORDER TO BE LIABLE FOR INDUCING INFRINGEMENT, ARISTA

09:57:45 24 MUST HAVE:

09:57:45 25   1.   INTENTIONALLY TAKEN ACTION THAT ACTUALLY INDUCED

09:57:49 1   DIRECT INFRINGEMENT.

09:57:50 2   2.   BEEN AWARE OF THE '526 PATENT.

09:57:53 3   3.   KNOWN THAT THE ACTS IT WAS CAUSING WOULD INFRINGE THE

09:57:57 4   PATENT.

09:57:58 5   ARISTA MAY BE CONSIDERED TO HAVE KNOWN THAT THE ACTS IT

09:58:02 6   WAS CAUSING WOULD INFRINGE THE '526 PATENT IF IT SUBJECTIVELY

09:58:06 7   BELIEVED THERE WAS A HIGH PROBABILITY THAT THE DIRECT

09:58:09 8   INFRINGER'S PRODUCT OR METHOD WAS PATENTED AND, NEVERTHELESS,

09:58:13 9   DELIBERATELY TOOK STEPS TO AVOID LEARNING THAT FACT.

09:58:16 10   IN OTHER WORDS, WILLFULLY BLINDED ITSELF TO THE INFRINGING

09:58:19 11   NATURE OF THE DIRECT INFRINGER'S ACTS.

09:58:34 12   IN THIS CASE CISCO ARGUES THAT ARISTA WILLFULLY INFRINGED

09:58:37 13   THE '526 PATENT BY SELLING EOS PLUS. AFTER CISCO FILED ITS

09:58:42 14   COMPLAINT TO PROVE WILLFUL INFRINGEMENT AGAINST ARISTA, CISCO

09:58:47 15   MUST FIRST PERSUADE YOU THAT ARISTA INFRINGED A CLAIM OF

09:58:51 16   CISCO'S PATENT. THE REQUIREMENTS FOR PROVING SUCH INFRINGEMENT

09:58:55 17   WERE DISCUSSED IN MY PRIOR INSTRUCTIONS.

09:58:57 18   TO PROVE WILLFUL INFRINGEMENT OF A PATENT, CISCO MUST

09:59:01 19   PERSUADE YOU BY A PREPONDERANCE OF THE EVIDENCE THAT ARISTA HAD

09:59:07 20   KNOWLEDGE OF THE PATENT AT ISSUE AND ACTED IN BAD FAITH,

09:59:11 21   WANTONLY, MALICIOUSLY, DELIBERATELY, CONSCIOUSLY, WRONGFULLY,

09:59:16 22   FLAGRANTLY, OR WITH RECKLESS DISREGARD OF ANY OF THE ASSERTED

09:59:20 23   CLAIMS OF ANY OF THE '526 PATENT.

09:59:24 24   YOU MUST BASE YOUR VERDICT ON THE KNOWLEDGE AND ACTIONS OF

09:59:28 25   ARISTA AT THE TIME THE INFRINGEMENT HAPPENED.

09:59:33 1   INFRINGEMENT ALONE, IS NOT ENOUGH TO PROVE WILLFULNESS,

09:59:35 2 AND MERE KNOWLEDGE OF THE '526 PATENT AT THE TIME OF

09:59:39 3 INFRINGEMENT IS NOT ENOUGH TO PROVE WILFULNESS.

09:59:42 4   ADDITIONALLY, TO PROVE THAT THE SALE OF EOS+ IS AN ACT OF

09:59:47 5 WILLFUL INFRINGEMENT, CISCO MUST PERSUADE YOU THAT EOS+ IS A

09:59:52 6 NEW PRODUCT COMPARED TO EOS.

09:59:55 7   YOU SHOULD CONSIDER ALL THE CIRCUMSTANCES INCLUDING THE

09:59:58 8 MOTIVE OR INTENT OF ARISTA IN DEVELOPING AND SELLING THE

10:00:01 9 ACCUSED PRODUCTS, WHETHER ARISTA KNEW OR SHOULD HAVE KNOWN THAT

10:00:05 10 ITS CONDUCT WAS UNREASONABLY RISKY AND WHETHER ARISTA HAD A

10:00:11 11 REASONABLE BELIEF AT THE TIME OF THE ALLEGED INFRINGEMENT THAT

10:00:13 12 ITS PRODUCTS DID NOT INFRINGE ANY OF THE ASSERTED CLAIMS OF THE

10:00:18 13 '526 PATENT.

10:00:25 14   I WILL INSTRUCT YOU ABOUT THE MEASURE OF DAMAGES FOR

10:00:27 15 CISCO'S PATENT CLAIM. BY INSTRUCTING YOU ON DAMAGES, I AM NOT

10:00:32 16 SUGGESTING WHICH PARTY SHOULD WIN ON ANY ISSUE.

10:00:36 17   IF YOU FIND THAT ARISTA INFRINGED ANY CLAIM OF THE '526

10:00:41 18 PATENT, YOU MUST THEN DETERMINE THE AMOUNT OF MONEY DAMAGES TO

10:00:44 19 BE AWARDED TO CISCO TO COMPENSATE IT FOR INFRINGEMENT.

10:00:49 20   THE AMOUNT OF THOSE DAMAGES MUST BE ADEQUATE TO COMPENSATE

10:00:53 21 CISCO FOR THE INFRINGEMENT. A DAMAGES AWARD SHOULD PUT THE

10:00:58 22 PATENT HOLDER IN APPROXIMATELY THE FINANCIAL POSITION IT WOULD

10:01:01 23 HAVE BEEN IN HAD THE INFRINGEMENT NOT OCCURRED. BUT IN NO

10:01:06 24 EVENT MAY THE DAMAGES AWARD BE LESS THAN A REASONABLE ROYALTY.

10:01:10 25   YOU SHOULD KEEP IN MIND THAT THE DAMAGES YOU AWARD ARE

10:01:13 1   MEANT TO COMPENSATE CISCO AND NOT PUNISH ARISTA.

10:01:18 2   CISCO HAS THE BURDEN TO PERSUADE YOU OF THE AMOUNT OF ITS

10:01:21 3   DAMAGES. YOU SHOULD AWARD ONLY THOSE DAMAGES THAT CISCO MORE

10:01:25 4   LIKELY THAN NOT SUFFERED. WHILE CISCO IS NOT REQUIRED TO PROVE

10:01:29 5   ITS DAMAGES WITH MATHEMATICAL PRECISION, IT MUST PROVE THEM

10:01:35 6   WITH REASONABLE CERTAINTY. CISCO IS NOT ENTITLED TO DAMAGES

10:01:38 7   THAT ARE REMOTE OR SPECULATIVE.

10:01:49 8   A ROYALTY IS A PAYMENT MADE TO A PATENT HOLDER IN EXCHANGE

10:01:53 9   FOR THE RIGHT TO MAKE, USE, OR SELL THE CLAIMED INVENTION.

10:01:56 10 THIS RIGHT IS CALLED A LICENSE. A REASONABLE ROYALTY IS THE

10:02:00 11 PAYMENT FOR THE LICENSE THAT WOULD HAVE RESULTED FROM A

10:02:03 12 HYPOTHETICAL NEGOTIATION BETWEEN THE PATENT HOLDER AND THE

10:02:07 13 INFRINGER TAKING PLACE AT THE TIME WHEN THE INFRINGING ACTIVITY

10:02:12 14 FIRST BEGAN.

10:02:13 15   IN CONSIDERING THE NATURE OF THIS NEGOTIATION, YOU MUST

10:02:17 16 ASSUME THAT THE PATENT HOLDER AND THE INFRINGER WOULD HAVE

10:02:21 17 ACTED REASONABLY AND WOULD HAVE ENTERED INTO A LICENSE

10:02:24 18 AGREEMENT.

10:02:25 19   YOU MUST ALSO ASSUME THAT BOTH PARTIES BELIEVE THE PATENT

10:02:29 20 WAS VALID AND INFRINGED. YOUR ROLE IS TO DETERMINE WHAT THE

10:02:34 21 RESULT OF THAT NEGOTIATION WOULD HAVE BEEN.

10:02:38 22   THE TEST FOR DAMAGES IS WHAT ROYALTY WOULD HAVE RESULTED

10:02:42 23 FROM THE HYPOTHETICAL NEGOTIATION, NOT SIMPLY WHAT EITHER PARTY

10:02:47 24 WOULD HAVE PREFERRED.

10:02:49 25   ONE WAY TO CALCULATE A ROYALTY IS TO DETERMINE A ONE-TIME

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10:02:54   1   LUMP SUM PAYMENT THAT THE INFRINGER WOULD HAVE PAID AT THE TIME

10:02:58   2   OF A HYPOTHETICAL NEGOTIATION FOR A LICENSE COVERING ALL THE

10:03:03   3   SALES OF THE LICENSED PRODUCT FOR SOME PERIOD OF TIME.

10:03:07   4        THAT PERIOD OF TIME MAY INCLUDE BOTH PAST AND FUTURE

10:03:11   5   SALES.

10:03:12   6        WHEN A ONE-TIME SUMP SUM IS PAID, THE INFRINGER PAYS A

10:03:17   7   SINGLE PRICE FOR A LICENSE COVERING BOTH PAST AND FUTURE

10:03:21   8   INFRINGING SALES.

10:03:25   9        DAMAGES THAT CISCO MAY BE AWARDED BY YOU COMMENCE ON THE

10:03:28  10   DATE THAT ARISTA HAS BOTH INFRINGED AND BEEN NOTIFIED OF THE

10:03:31  11   '526 PATENT.  IN THIS CASE, CISCO AND ARISTA AGREE THAT DATE

10:03:35  12   WAS DECEMBER 5, 2014.

10:03:42  13          THE COURT:  ALL RIGHT.  THAT'S WHERE I'M GOING TO

10:03:44  14    STOP.

10:03:45  15        THE REMAINDER OF THE INSTRUCTIONS HAVE TO DO WITH WHAT YOU

10:03:49  16    DO IN THE JURY ROOM.  IT TOOK JUST ABOUT THE TIME I THOUGHT IT

10:03:52  17    WOULD, AND I THINK WE COULD ALL PROBABLY USE A BREAK, AND

10:03:55  18    THERE'S A LITTLE BIT OF SET UP AS WELL.

10:03:57  19        SO LET'S TAKE A 10-MINUTE BREAK.

10:04:00  20        (RECESS FROM 10:04 A.M. UNTIL 10:14 A.M.)

10:14:18  21          THE COURT:  WE ARE BACK ON THE RECORD AND ALL OF OUR

10:14:21  22    JURORS ARE HERE.

10:14:22  23        ALL RIGHT.  NOW I GET TO TURN THE MATTER OVER TO THE

10:14:26  24    ATTORNEYS.

10:14:27  25        MR. NELSON, WOULD YOU LIKE TO GIVE YOUR CLOSING ARGUMENT?
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10:17:25 1   QUESTIONS THAT I ASKED HIM. "IT'S TRUE THAT WE USED THE SAME

10:17:30 2   CLI FOR MANY OF OUR BASE OR CORE FEATURES."

10:17:33 3   "AND INTENTIONALLY COPIED THAT, RIGHT?"

10:17:36 4   "FOR THOSE CORE FEATURES, YES."

10:17:38 5   THAT'S IMPORTANT, AND YOU ARE GOING TO SEE THIS THEME

10:17:41 6   THROUGHOUT AS WE TALK ABOUT THIS, BECAUSE YOU KNOW, ARISTA SAYS

10:17:44 7   I DIDN'T TAKE A LOT. I DIDN'T TAKE A LOT OF THIS.

10:17:49 8   BUT THE BOTTOM LINE IS THEY TOOK WHAT THEY NEEDED TO TAKE.

10:17:52 9   WE HEARD EVIDENCE FROM SOME OF THE THIRD PARTIES ABOUT WHAT THE

10:17:56 10   CORE FEATURES ARE IN THE SWITCHES, WHAT PEOPLE EXPECT TO SEE.

10:17:58 11   AND THAT'S WHAT THEY TOOK. THAT'S WHAT THEY TOOK SO THEY COULD

10:18:01 12   GO OUT THERE AND THEY COULD TELL THE CUSTOMER, YOU DON'T NEED

10:18:06 13   TO RETRAIN, YOU KNOW CISCO, YOU KNOW US. YOU CAN DROP US IN,

10:18:09 14   AND WE CAN REPLACE CISCO. AND THAT'S WHY WE'RE HERE.

10:18:12 15   AND WHAT ELSE DO WE KNOW ABOUT ARISTA BEING A BLATANT

10:18:17 16   VIOLATOR? WE KNOW FROM DR. BLACK'S OWN STUDY, AND WE'VE TALKED

10:18:22 17   ABOUT THIS AND THERE ARE SOME ISSUES WITH RESPECT TO THAT.

10:18:25 18   THIS IS EXHIBIT 9041, I PUT THIS ONE INTO EVIDENCE, AS YOU WILL

10:18:29 19   RECALL.

10:18:30 20   WE KNOW THAT A MAJORITY OF THESE COMMANDS THAT ARE AT

10:18:34 21   ISSUE HERE IN THIS CASE FROM THIS COLLECTION WEREN'T USED BY

10:18:37 22   THE VAST MAJORITY. I MEAN, 51 ARE USED BY NOBODY BUT ARISTA

10:18:42 23   AND CISCO. ANOTHER 43 ARE USED BY ONLY ONE OTHER VENDOR. AND

10:18:46 24   REMEMBER THERE WERE 18, THOSE WERE HAND-PICKED BY DR. BLACK,

10:18:50 25   HAND-PICKED BY DR. BLACK IN ORDER TO PROVE A POINT. HE SAID,

10:29:51 1   BROKEN DOWN, IT SAYS FIRST -- ACTUALLY I SHOULD GO BACK ONE.

10:29:56 2   BECAUSE RIGHT ABOVE IT SAYS THERE ARE TWO WAYS THAT CISCO CAN

10:29:59 3   MEET ITS BURDEN, IN OTHER WORDS, OF SHOWING THE COPYING.

10:30:03 4   FIRST, CISCO MAY ESTABLISH ARISTA'S COPYING THROUGH DIRECT

10:30:06 5   EVIDENCE. AN EXAMPLE OF DIRECT EVIDENCE WOULD BE AN ADMISSION

10:30:09 6   BY ARISTA THAT PART OR ALL OF THE WORK WAS COPIED.

10:30:12 7   THE SECOND ONE YOU SEE IT'S INTRODUCED ALTERNATIVELY, IS

10:30:15 8   THE INDIRECT EVIDENCE, RIGHT? ACCESS, AND VIRTUAL IDENTITY.

10:30:19 9   THOSE ARE TWO DIFFERENT THINGS. AND YOU DON'T HAVE TO DO BOTH

10:30:23 10 OF THEM BECAUSE YOU KNOW WHY, THIS CASE, THIS IS A DIRECT

10:30:26 11 COPYING CASE, RIGHT? THERE'S DIRECT EVIDENCE OF COPYING HERE,

10:30:30 12 THERE ARE A MULTITUDE OF ADMISSIONS. AND I'M GOING TO GO

10:30:34 13 THROUGH THOSE THINGS.

10:30:35 14   SO YOU DON'T NEED TO GET TO THE SECOND ONE HERE. THE

10:30:39 15 SECOND ONE IS SATISFIED AS WELL, YOU KNOW, IF WE WENT THROUGH

10:30:43 16 THAT, BUT YOU ARE GOING TO HEAR A LOT FROM ARISTA ABOUT THAT

10:30:46 17 SECOND METHOD. YOU DON'T NEED TO DO IT BECAUSE THERE'S AN

10:30:49 18 OVERWHELMING AMOUNT OF DIRECT EVIDENCE OF COPYING HERE.

10:30:52 19   AND LET ME JUST TALK ABOUT SOME OF THAT.

10:30:56 20   WELL, WE STARTED THE TRIAL, I THINK THIS MIGHT HAVE BEEN

10:31:00 21 ONE OF THE FIRST THINGS I SHOWED YOU IN OPENING WHEN I TOLD YOU

10:31:04 22 THIS IS GOING TO BE A LITTLE BIT OF A STRANGE CASE FOR

10:31:07 23 COPYRIGHTS BECAUSE USUALLY THERE'S SOME DISPUTE ABOUT WHETHER

10:31:11 24 THERE WAS COPYING.

10:31:12 25   NO DISPUTE HERE. MR. DUDA, AND YOU HEARD THIS, THIS IS

10:43:16 1   MR. FOSS, IS AN ARISTA EMPLOYEE, THAT'S ONE OF THEIR HIGH END

10:43:21 2   MARKETING FOLKS, THAT SAYS, "THE CLI COMMANDS ON OUR SWITCH ARE

10:43:25 3   IDENTICAL TO CISCO IOS, SO THERE SHOULD BE NO LEARNING CURVE TO

10:43:29 4   GET IT CONFIGURED," RIGHT?

10:43:31 5   SO THEY TOOK WHAT THEY NEEDED SO THAT THEY COULD GO OUT

10:43:35 6   AND TELL CUSTOMERS WE ARE IDENTICAL TO IOS SO THAT YOU DON'T

10:43:38 7   NEED TO RETRAIN YOUR PEOPLE, YOU DON'T NEED TO DO ANYTHING, YOU

10:43:42 8   KNOW CISCO, YOU KNOW US.

10:43:45 9   AND AGAIN, HERE'S ANOTHER, THIS IS AN E-MAIL EXCHANGE

10:43:49 10   BETWEEN A POTENTIAL CUSTOMER, MR. DUDA, WE ARE UP TO 2010 NOW.

10:43:54 11   AND IT SAYS, THIS IS THE CUSTOMER, "YOU STATED THAT THE ARISTA

10:43:56 12   CLI IS ALMOST EXACTLY LIKE THE CISCO CLI," RIGHT? THAT'S WHAT

10:44:00 13   HE SAYS.

10:44:01 14   AND WHAT DO THEY GO ON TO SAY IN THE E-MAIL? THIS IS

10:44:04 15   EXHIBIT 185, AND I WON'T READ ALL OF THIS, BUT WHAT THE

10:44:09 16   RESPONSE IS, "OH, YEAH. AND BY THE WAY, WE DON'T HAVE OUR OWN

10:44:12 17   DOCUMENTATION YET, BUT THAT'S FINE, JUST READ THE CISCO

10:44:15 18   DOCUMENTATION, BECAUSE OUR PRODUCTS ARE EXACTLY THE SAME."

10:44:19 19   SO THEY TOOK WHAT THEY NEEDED, SO THAT THEY COULD TELL

10:44:23 20   CUSTOMERS THEY ARE THE SAME, AND YOU DON'T NEED TO TRAIN, YET

10:44:26 21   THEY WANT TO COME IN HERE IN COURT AND TELL YOU WE DIDN'T TAKE

10:44:29 22   ANYTHING, WE DIDN'T TAKE VERY MUCH, WHAT WE TOOK WAS A TRIVIAL

10:44:33 23   AMOUNT.

10:44:34 24   SO THINK ABOUT THAT WHEN YOU GO BACK INTO THE ROOM AND

10:44:39 25   THINK ABOUT WHETHER THAT MAKES ANY SENSE.

10:46:20 1   SPEED TRADES AND THINGS TO, THAT'S WHAT THEY WERE FOCUSED ON.

10:46:23 2   AND I THINK MR. DUDA SAID, WELL, OUR PRODUCT HAD FEWER

10:46:27 3   FEATURES, AND MR. SADANA DID AS WELL.

10:46:29 4   WELL, THAT'S 2008, AND SURE THERE ARE LESS FEATURES AND

10:46:34 5   THEREFORE LESS COMMANDS THAT THEY COPIED, BUT NOW WE ARE UP TO

10:46:38 6   2011, 2012 WHEN THEY ARE GETTING INTO THE DATA CENTER MARKET,

10:46:42 7   AND WE HEARD THAT FROM MR. ULLAL, AMONG OTHER FOLKS.

10:46:45 8   AND WHAT DO WE SEE? THEY CONTINUE. AS THEY ADD THESE

10:46:49 9   FEATURES FOR THE DATA CENTER MARKET, THEY CONTINUE TO COPY

10:46:52 10   CISCO USER INTERFACE COMMANDS, RIGHT?

10:46:55 11   SO ON THE ONE HAND, THEY WANT TO TELL YOU IT WASN'T

10:46:59 12   IMPORTANT TO US, OUR DATA CENTER, OR THE CUSTOMERS DIDN'T CARE

10:47:02 13   ABOUT THIS, YET THEY CONTINUED TO COPY THESE THINGS.

10:47:05 14   AND THEN LET'S LOOK AT SOME OF THE OTHER EVIDENCE THAT WE

10:47:09 15   SAW THAT'S RELEVANT TO THIS. THIS IS 2012. 2012. SO AFTER

10:47:16 16   THEY ARE IN THE DATA CENTER MARKET, EXHIBIT 171, AND I WOULD

10:47:19 17   REALLY LIKE YOU TO GO BACK AND TAKE A LOOK AT THIS ONE, I THINK

10:47:22 18   IT'S AN IMPORTANT ONE THAT I REFERRED TO IN THE OPENING, THIS

10:47:25 19   IS THE RESPONSE OF MR. DALE, AND WE HEARD FROM MR. DALE, HE

10:47:30 20   TESTIFIED HERE, TALKS TO A SALES ENGINEER ABOUT HOW THEY SHOULD

10:47:35 21   RESPOND TO A CUSTOMER.

10:47:37 22   AS OF 2012, ARE THEY TELLING CUSTOMERS OH, WE'VE DEVIATED,

10:47:42 23   WE ARE NOT THE SAME AS CISCO ANYMORE? OF COURSE NOT. IT SAYS,

10:47:46 24   "WE WOULD BE A PRACTICAL DROP-IN REPLACEMENT FOR CISCO, GIVEN

10:47:51 25   THE 99.999 PERCENT SIMILARITY IN THE CLI."

10:47:57 1   HOW CAN IT BE THAT YOU COME IN TO COURT AND YOU SAY, I

10:48:01 2 TOOK A TRIVIAL AMOUNT, BUT YOU ARE TELLING YOUR SALES ENGINEERS

10:48:06 3 AS OF 2012 TO GO OUT AND TELL CUSTOMERS THAT WE ARE

10:48:09 4 99.999 PERCENT SIMILAR? IT DOESN'T MAKE ANY SENSE. IT CAN'T

10:48:14 5 BE THAT, I DON'T KNOW WHAT IT IS, .001% MAKES TRIVIAL FROM

10:48:22 6 NONTRIVIAL, RIGHT? THAT CAN'T BE THE CASE, THAT DOESN'T MAKE

10:48:24 7 ANY SENSE.

10:48:24 8   SO AGAIN, THEY TOOK WHAT THEY NEEDED SO THEY COULD TELL

10:48:27 9 CUSTOMERS, WE'RE CISCO. AND THIS IS AS OF 2012.

10:48:31 10   IF WE GO FORWARD, THIS IS 2013 NOW, THIS ISN'T EARLY ON,

10:48:36 11 THIS IS WELL AFTER THEY ARE IN THE DATA CENTER MARKET, WELL

10:48:37 12 AFTER THEY ARE DOING THEIR CLOUD CUSTOMERS THAT WE HEARD A

10:48:41 13 BUNCH ABOUT. AND THIS IS EXHIBIT 166 AND 166-A. THIS IS THE

10:48:45 14 EXCERPT THAT WE SAW FROM MR. DALE'S PRESENTATION TO POTENTIAL

10:48:49 15 CUSTOMERS AT THIS CONFERENCE.

10:48:50 16   AND WHAT DOES THIS SAY? ARISTA'S CLI COMMANDS, SAME AS

10:48:55 17 CISCO IOS. SO ONCE AGAIN, 2013, STILL TELLING PEOPLE THEY ARE

10:48:59 18 THE SAME.

10:49:00 19   AND IMPORTANTLY HERE, WHAT ELSE DOES HE SAY? YOU CAN

10:49:04 20 ACTUALLY TAKE A CONFIG OFF A CATALYST OR NEXUS AND APPLY IT IN

10:49:09 21 EXACTLY THE SAME WAY.

10:49:10 22   AND HE EXPLAINED THAT DURING HIS TESTIMONY. CATALYST AND

10:49:12 23 NEXUS, THOSE ARE CISCO SWITCHES, RIGHT? SO THEY ARE TELLING

10:49:16 24 POTENTIAL CUSTOMERS AT THIS CONFERENCE, TAKE YOUR CONFIG FILE

10:49:20 25 OFF OF YOUR CISCO SWITCH AND DROP IT INTO YOUR ARISTA SWITCH

10:58:23 1   DR. ALMEROTH DID. HE TOLD YOU THAT. HE GAVE YOU

10:58:26 2   TESTIMONY ABOUT THAT. HE TOLD YOU ABOUT THE QUALITY OF THAT

10:58:29 3   WORK. SO YOU HEARD THAT FROM HIM. HE EVALUATED WHAT YOU ARE

10:58:33 4   SUPPOSED TO DO, BUT DR. BLACK DID NOT, AND TOLD US THAT HE

10:58:37 5   DIDN'T DO THAT.

10:58:39 6   WELL, LET'S TALK A LITTLE BIT ABOUT THIS IDEA OF QUANTITY,

10:58:44 7   BECAUSE YOU'VE HEARD SOME NUMBERS TOSSED AROUND LIKE THERE MAY

10:58:47 8   BE 18,000 COMMANDS OR SOMETIMES WE HEARD 16,000 COMMANDS IN

10:58:52 9   IOS.

10:58:52 10   BUT REMEMBER WHAT WE HEARD AT THE BEGINNING, RIGHT? CISCO

10:58:56 11   MAKES MANY, MANY PRODUCTS OUT THERE. ARISTA HAS ONLY ONE

10:58:59 12   PRODUCT LINE. THAT'S ALL. AND ARISTA TOOK WHAT THEY NEEDED

10:59:07 13   FOR THAT PRODUCT LINE.

10:59:10 14   AND WE KNOW HERE, THIS IS ANOTHER DOCUMENT, THIS IS,

10:59:14 15   AGAIN, SOME TESTING THAT WAS DONE ON ARISTA PRODUCTS, AND THE

10:59:18 16   CONCLUSION FROM THE TESTING, THIS IS AS OF 2009, EXHIBIT 278,

10:59:23 17   THIS SYSTEM, IS A VERY CLOSE CLONE OF THE IOS CLI. THIS IS A

10:59:29 18   MAJOR PLUS FOR THE MAJORITY OF CUSTOMERS WHO HAVE ALREADY

10:59:32 19   CISCO-TRAINED STAFF.

10:59:35 20   SO AGAIN, ON THE ONE HAND THEY WANT TO COME IN AND TELL

10:59:38 21   YOU WHAT WE TOOK WAS JUST A SMALL AMOUNT, WHAT WE TOOK WAS NOT

10:59:42 22   IMPORTANT. BECAUSE THAT'S WHAT YOU ARE SUPPOSED TO BE

10:59:44 23   EVALUATING. YET, IT'S LIKE THEY ARE TRYING TO ASK YOU TO GIVE

10:59:49 24   THEM A PASS FOR TAKING WHAT THEY DIDN'T NEED, WHICH DOESN'T

10:59:53 25   MAKE ANY SENSE.

10:59:54 1   WE'VE HEARD SOME OF THAT. YOU DON'T GET A PASS FOR TAKING

10:59:57 2   WHAT YOU DON'T NEED, YOU GO OUT THERE, YOU TAKE WHAT YOU NEED

11:00:00 3   SO YOU CAN SAY YOU ARE 100 PERCENT -- OR EXCUSE ME, I MISSPOKE.

11:00:06 4   99.999 PERCENT SAME AND A DROP-IN REPLACEMENT, YET YOU COME

11:00:11 5   INTO COURT AND SAY NO, WE DIDN'T TAKE VERY MUCH.

11:00:15 6   SO LET'S TALK ABOUT THIS FOURTH FAIR USE FACTOR THAT YOU

11:00:18 7   ARE GOING TO EVALUATE. AND ONE OF THE THINGS THAT THIS SAYS,

11:00:23 8   THIS IS INSTRUCTION 56, FACTOR CONSIDERS WHETHER THE ACCUSED

11:00:28 9   WORK IS OFFERED OR USED AS A SUBSTITUTE FOR THE ORIGINAL

11:00:32 10   COPYRIGHTED WORK.

11:00:33 11   SO LET'S TALK ABOUT THAT FIRST. IT SURE WAS, RIGHT?

11:00:37 12   EXHIBIT 171. YOU ARE TELLING PEOPLE IT'S A 99.99 PERCENT

11:00:42 13   DROP-IN REPLACEMENT, THAT'S ABOUT AS MUCH AS A SUBSTITUTE FOR

11:00:47 14   THE WORK AS YOU CAN GET. SO THERE'S NO QUESTION ABOUT THAT.

11:00:51 15   NOW WHAT WE MOVE INTO IS THIS OTHER THING. BECAUSE THE

11:00:54 16   WAY I HEARD IT ANYWAY, AND I MIGHT BE WRONG, AND YOU ARE GOING

11:00:56 17   TO HEAR FROM ARISTA'S COUNSEL, BUT THE WAY I HEARD IS, YEAH,

11:00:59 18   BUT THERE'S NO HARM TO CISCO, RIGHT? THERE'S NO HARM OUT THERE

11:01:04 19   FOR US USING IT BECAUSE THERE WAS WIDESPREAD USE OF THIS USER

11:01:08 20   INTERFACE BY OTHERS.

11:01:10 21   BUT AGAIN, THEY HIRED DR. BLACK TO DO THAT. AND SET

11:01:14 22   ASIDE -- I THINK THERE WAS ENOUGH TESTIMONY THAT WE WENT

11:01:18 23   THROUGH ABOUT HIS METHODOLOGY IN TERMS OF HOW HE SELECTED HIS

11:01:23 24   GROUP. SO WE WILL PUT THAT ASIDE. BUT HE EVEN SAID

11:01:28 25   EXPLICITLY, HE WASN'T OFFERING ANY OPINION ON WHETHER THERE WAS

11:10:11 1   CASE.

11:10:12 2   DR. BLACK TOLD US THAT AT THE BEGINNING. IT MAKES SENSE.

11:10:15 3   YOU CAN'T GO AFTER EVERYBODY WITH THESE THINGS. AND THE OTHER

11:10:18 4   THING, WHAT DID WE SEE OVER AND OVER AGAIN? THE EVIDENCE HERE,

11:10:23 5   ARISTA HAS BEEN OUT THERE TELLING THEIR CUSTOMERS THEY ARE A

11:10:26 6   DROP-IN REPLACEMENT. WE ARE CISCO. WE ARE THE SAME. COPY AND

11:10:32 7   PASTE YOUR CONFIGURATION FILES, ALL OF THOSE KINDS OF THINGS.

11:10:35 8   YOU DIDN'T SEE ONE PIECE OF EVIDENCE FROM ANYONE, AND WE

11:10:37 9   HAD THIRD PARTIES COME IN, THAT ANY OTHER COMPANY OUT THERE HAS

11:10:41 10   EVER MADE THOSE CLAIMS. NO ONE HAS EVER SAID WE ARE THE SAME,

11:10:46 11   WE ARE A DROP-IN REPLACEMENT.

11:10:48 12   SO NOW LET ME TURN TO THE UNIFIED INTERFACE PATENT. AND

11:10:54 13   HERE THE UNIFIED INTERFACE PATENT, THAT'S THE '526 PATENT.

11:10:58 14   HERE THE FUNCTIONALITY THAT WE ARE TALKING ABOUT IS IN THE

11:11:00 15   PARSER CODE, RIGHT, IT'S IN THE SOURCE CODE.

11:11:06 16   AND WHAT WAS THE PROBLEM, AND DR. JEFFAY TALKED ABOUT THIS

11:11:11 17   A BIT AND WE SAW SOME OF THE TESTIMONY AT LEAST ON VIDEOTAPE

11:11:15 18   FROM MR. WHEELER. BASICALLY, IT WAS THIS IDEA THAT YOU MIGHT

11:11:19 19   HAVE A NUMBER OF TOOLS AND THINGS THAT YOU CAN USE IN YOUR

11:11:22 20   PRODUCT, RIGHT, THAT CAN BE ADDED TO THE OPERATING SYSTEM. AND

11:11:26 21   THOSE PEOPLE THAT MAKE THE TOOLS, THEY MIGHT USE DIFFERENT

11:11:29 22   COMMANDS. AND WE KNOW WHY BECAUSE DIFFERENT ENGINEERS MAKE

11:11:32 23   DIFFERENT CHOICES, AS TO THE COMMANDS THAT MIGHT BE THE SAME

11:11:36 24   FUNCTIONALITY.

11:11:37 25   SO WHAT DO THEY DO? THEY PROVIDED THIS UNIFIED INTERFACE

11:59:52	1	LITTLE BIT ABOUT HUAWEI.
11:59:53	2	COULD I SEE THE NEXT SLIDE.
11:59:55	3	THE BUSINESS MANAGER RUNNING HUAWEI TESTIFIED, THAT'S
11:59:59	4	MR. GIANCARLO, THAT HUAWEI WAS ABOUT SOURCE CODE. BUT YOU
12:00:02	5	DON'T EVEN NEED TO RELY JUST ON MR. GIANCARLO. HUAWEI HAPPENED
12:00:06	6	IN 2003. 2003. ALL OF THESE STATEMENTS THAT WE'RE TALKING
12:00:12	7	ABOUT ARE AFTER THE HUAWEI LAWSUIT WAS DONE, RIGHT?
12:00:19	8	██
12:00:22	9	██
12:00:26	10	██
12:00:30	11	STATEMENTS BY MR. GIANCARLO AND THE STATEMENT BY MR. VOLPI AND
12:00:34	12	ALL OF THESE DATA SHEETS, THEY POST-DATE HUAWEI. THEY'VE
12:00:38	13	HAPPENED SINCE THEN. HUAWEI WAS A LAWSUIT ABOUT SOURCE CODE.
12:00:43	14	IN THE HUAWEI CASE, ACTUAL ORIGINAL SOURCE CODE INSIDE THE
12:00:46	15	SWITCH WAS COPIED, 29,000 LINES OF IT, APPARENTLY. THAT'S
12:00:53	16	QUITE A BIT. AND AS MR. GIANCARLO SAYS, THE FOCUS WAS ON THEM
12:00:56	17	STOPPING USING OUR SOURCE CODE.
12:00:59	18	THEN WHAT OTHER EVIDENCE DO YOU HAVE ABOUT WHAT HAPPENED
12:01:01	19	IN THE MARKET? THIS IS TRIAL EXHIBIT 9049. IT'S -- IT WAS THE
12:01:07	20	ONE INSTANCE WHEN DR. BLACK WAS ABLE TO GET HIS HANDS ON ALL
12:01:12	21	THE RELEVANT MANUALS FOR ONE CUSTOMER, AND HE PRESENTED THIS
12:01:17	22	EXHIBIT TO YOU, IT'S 26 PAGES OF COMMANDS THAT ARE IN COMMON
12:01:24	23	BETWEEN CISCO AND DELL. 26 PAGES, 1600 COMMANDS.
12:01:30	24	SO DON'T TELL ME THAT SOMEHOW ARISTA IS AN OUTLIER OR
12:01:34	25	ARISTA IS THE WORST OR ARISTA IS THE MOST BLATANT, THAT'S

02:25:30 1   YOU TO GO BACK AND LOOK AT THE EVIDENCE, LOOK AT THE LAW, AND I

02:25:34 2   THINK RENDER A VERDICT IN OUR FAVOR BASED UPON THAT.

02:25:37 3   SO THANK YOU VERY MUCH. I REALLY DO APPRECIATE IT.

02:25:41 4   THE COURT: THANK YOU, MR. NELSON.

02:25:52 5   ALL RIGHT. NOW THAT YOU'VE HEARD THE CLOSING ARGUMENTS OF

02:25:56 6   THE LAWYERS, I'M GOING TO READ TO YOU THE LAST OF THE JURY

02:25:59 7   INSTRUCTIONS, AND MERCIFULLY THERE ARE ONLY A FEW OF THEM. AND

02:26:04 8   THEN I WANT TO TALK TO YOU A LITTLE BIT INFORMALLY ABOUT

02:26:07 9   WHETHER OR NOT IT IS GOING ON GO ON IN THE JURY ROOM.

02:26:10 10   BEFORE YOU BEGIN YOUR DELIBERATIONS, ELECT ONE MEMBER OF

02:26:13 11   THE JURY AS YOUR PRESIDING JUROR. THAT PERSON WILL PRESIDE

02:26:17 12   OVER THE DELIBERATIONS AND SERVE AS THE SPOKES PERSON FOR THE

02:26:19 13   JURY IN COURT.

02:26:21 14   YOU SHALL DILIGENTLY STRIFE TO REACH AGREEMENT WITH ALL OF

02:26:26 15   THE OTHER JURORS IF YOU CAN DO SO. YOUR VERDICT MUST BE

02:26:29 16   UNANIMOUS.

02:26:32 17   EACH OF YOU MUST DECIDE THE CASE FOR YOURSELF. BUT YOU

02:26:35 18   SHOULD DO SO ONLY AFTER YOU HAVE CONSIDERED ALL OF THE

02:26:38 19   EVIDENCE, DISCUSSED IT FULLY WITH THE OTHER JURORS, AND

02:26:41 20   LISTENED TO THEIR VIEWS.

02:26:43 21   IT IS IMPORTANT THAT YOU ATTEMPT TO DO REACH A UNANIMOUS

02:26:46 22   VERDICT, BUT OF COURSE, ONLY IF EACH OF YOU CAN DO SO AFTER

02:26:51 23   HAVING MADE YOUR OWN CONSCIENTIOUS DECISION.

02:26:55 24   DO NOT BE UN WILLING TO CHANGE YOUR OPINION IF THE

02:26:58 25   DISCUSSION PERSUADES YOU THAT YOU SHOULD. BUT DO NOT COME TO A

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02:27:02  1    DECISION SIMPLY BECAUSE OTHER JURORS THINK IT IS RIGHT.  OR

02:27:06  2    CHANGE AN HONEST BELIEF ABOUT THE WEIGHT AND EFFECT OF THE

02:27:09  3    EVIDENCE SIMPLY TO REACH A VERDICT.

02:27:14  4         BECAUSE YOU MUST BASE YOUR VERDICT ONLY ON THE EVIDENCE

02:27:18  5    RECEIVED IN THE CASE, AND ON THESE INSTRUCTIONS, I REMIND YOU

02:27:22  6    THAT YOU MUST NOT BE EXPOSED TO ANY OTHER INFORMATION ABOUT THE

02:27:25  7    CASE OR TO THE ISSUES IT INVOLVES, EXCEPT FOR DISCUSSING THE

02:27:29  8    CASE WITH YOUR FELLOW JURORS DURING YOUR DELIBERATIONS.  DO NOT

02:27:35  9    COMMUNICATE WITH ANYONE IN ANY WAY AND DO NOT LET ANYONE ELSE

02:27:39  10   COMMUNICATE WITH YOU IN ANY WAY ABOUT THE MERITS OF THE CASE OR

02:27:42  11   ANYTHING TO DO WITH IT.

02:27:43  12        THIS INCLUDES DISCUSSING THE CASE IN PERSON, IN WRITING,

          13   BY PHONE OR ELECTRONIC MEANS, VIA E-MAIL, VIA TEXT MESSAGING,

          14   OR ANY INTERNET CHAT ROOM, BLOG, WEBSITE, OR APPLICATION,

          15   INCLUDING BUT NOT LIMITED TO FACEBOOK, YOUTUBE, TWITTER,

          16   INSTAGRAM, LINKEDIN, SNAPCHAT, OR ANY OTHER FORMS OF SOCIAL

          17   MEDIA.

02:28:07  18        THIS APPLIES TO COMMUNICATING WITH YOUR FAMILY MEMBERS,

02:28:10  19   YOUR EMPLOYER, THE MEDIA OR PRESS, AND THE PEOPLE INVOLVED IN

02:28:14  20   THE TRIAL.

02:28:15  21        IF YOU ARE ASKED OR APPROACHED IN ANY WAY ABOUT YOUR JURY

02:28:19  22   SERVICE OR ANYTHING ABOUT THIS CASE, YOU MUST RESPOND THAT YOU

02:28:22  23   HAVE BEEN ORDERED NOT TO DISCUSS THE MATTER AND TO REPORT THE

02:28:26  24   CONTACT TO THE COURT.

02:28:29  25        DO NOT READ, WATCH, OR LISTEN TO ANY NEWS OR MEDIA
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02:28:32	1	ACCOUNTS OR COMMENTARY ABOUT THE CASE OR ANYTHING TO DO WITH
02:28:36	2	IT.
02:28:36	3	DO NOT DO ANY RESEARCH, SUCH AS CONSULTING DICTIONARIES,
02:28:40	4	SEARCHING THE INTERNET, OR USING OTHER REFERENCE MATERIALS.
02:28:43	5	AND DO NOT MAKE ANY INVESTIGATION OR IN ANY OTHER WAY TRY IT
02:28:51	6	LEARN ABOUT THE CASE ON YOUR OWN.
02:28:53	7	DO NOT VISIT OR VIEW ANY PLACE DISCUSSED IN THE CASE AND
02:28:56	8	DO NOT USE INTERNET PROGRAMS OR OTHER DEVICES TO SEARCH FOR OR
02:29:01	9	VIEW ANY PLACE DISCUSSED DURING THE TRIAL.
02:29:04	10	ALSO, DO NOT DO ANY RESEARCH ABOUT THIS CASE, THE LAW, OR
02:29:07	11	THE PEOPLE INVOLVED, INCLUDING THE PARTIES, THE WITNESSES OR
02:29:11	12	THE LAWYERS, UNTIL YOU HAVE BEEN EXCUSED AS JURORS.
02:29:15	13	IF YOU HAPPEN TO READ OR HEAR ANYTHING TOUCHING ON THE
02:29:18	14	CASE, IN THE MEDIA, TURN AWAY AND REPORT IT TO ME AS SOON AS
02:29:23	15	POSSIBLE.
02:29:24	16	THESE RULES PROTECT EACH PARTY'S RIGHTS TO HAVE THIS CASE
02:29:28	17	DECIDED ONLY ON THE EVIDENCE THAT HAS BEEN PRESENTED HERE IN
02:29:31	18	COURT. WITNESSES HERE IN COURT TAKE AN OATH TO TELL THE TRUTH
02:29:35	19	AND THE ACCURACY OF THEIR TESTIMONY IS TESTED THROUGH THE TRIAL
02:29:39	20	PROCESS.
02:29:39	21	IF YOU DO ANY RESEARCH OR INVESTIGATION OUTSIDE THE
02:29:42	22	COURTROOM, OR GAIN ANY INFORMATION THROUGH IMPROPER
02:29:45	23	COMMUNICATIONS, THEN YOUR VERDICT MAY BE INFLUENCED BY
02:29:47	24	INACCURATE, INCOMPLETE OR MISLEADING INFORMATION THAT HAS NOT
02:29:53	25	BEEN TESTED BY THE TRIAL PROCESS.

02:29:58 1   EACH OF THE PARTIES IS ENTITLED TO A FAIR TRIAL BY AN

02:30:02 2 IMPARTIAL JURY, AND IF YOU DECIDE THE CASE BASED ON INFORMATION

02:30:06 3 NOT PRESENTED IN COURT, YOU WILL HAVE DENIED THE PARTIES A FAIR

02:30:10 4 TRIAL.

02:30:11 5   REMEMBER, YOU HAVE TAKEN AN OATH TO FOLLOW THE RULES AND

02:30:14 6 IT IS VERY IMPORTANT THAT YOU FOLLOW THESE RULES. A JUROR WHO

02:30:19 7 VIOLATES THESE RESTRICTIONS JEOPARDIZES THE FAIRNESS OF THE

02:30:23 8 PROCEEDINGS. IF ANY JUROR IS EXPOSED TO ANY OUTSIDE

02:30:26 9 INFORMATION, PLEASE NOTIFY THE COURT IMMEDIATELY.

02:30:32 10   IF IT BECOMES NECESSARY DURING YOUR DELIBERATIONS TO

02:30:35 11 COMMUNICATE WITH ME, YOU MAY SEND A NOTE THROUGH THE MARSHAL,

02:30:39 12 SIGNED BY YOUR PRESIDING JUROR OR BY ONE OR MORE MEMBERS OF THE

02:30:43 13 JURY.

02:30:44 14   NO MEMBER OF THE JURY SHOULD EVER ATTEMPT TO COMMUNICATE

02:30:47 15 WITH ME, EXCEPT BY A SIGNED WRITING. I WILL COMMUNICATE WITH

02:30:52 16 ANY MEMBER OF THE -- I WILL COMMUNICATE WITH ANY MEMBER OF THE

02:30:59 17 JURY ON ANYTHING CONCERNING THE CASE ONLY IN WRITING OR HERE IN

02:31:03 18 OPEN COURT.

02:31:04 19   IF YOU SEND OUT A QUESTION, I WILL CONSULT WITH THE

02:31:06 20 PARTIES BEFORE ANSWERING IT, WHICH MAY TAKE SOME TIME. YOU MAY

02:31:11 21 CONTINUE YOUR DELIBERATIONS WHILE WAITING FOR THE ANSWER TO ANY

02:31:14 22 QUESTION.

02:31:15 23   REMEMBER THAT YOU ARE NOT TO TELL ANYONE, INCLUDING ME,

02:31:18 24 HOW THE JURY STANDS, NUMERICALLY OR OTHERWISE, UNTIL AFTER YOU

02:31:22 25 HAVE REACH HAPPENED A UNANIMOUS VERDICT OR HAVE BEEN

02:31:25 1   DISCHARGED.

02:31:26 2   DO NOT DISCLOSE ANY VOTE COUNT IN ANY NOTE TO THE COURT.

02:31:34 3   A VERDICT FORM HAS BEEN PREPARED FOR YOU. AFTER YOU HAVE

02:31:37 4   REACHED UNANIMOUS AGREEMENT ON A VERDICT, YOUR PRESIDING JUROR

02:31:41 5   SHALL COMPLETE THE VERDICT FORM ACCORDING TO YOUR

02:31:43 6   DELIBERATIONS, SIGN AND DATE IT AND ADVISE THE CLERK THAT YOU

02:31:46 7   ARE READY TO RETURN TO THE COURTROOM.

02:31:50 8   ALL RIGHT. LET ME DISCUSS A NUMBER OF THINGS WITH YOU TO

02:31:53 9   BE A LITTLE MORE DESCRIPTIVE OF YOUR JOB IN THE JURY ROOM.

02:31:57 10   IN JUST A FEW MINUTES, I WILL EXCUSE YOU TO THE JURY ROOM.

02:32:00 11   NOW YOU ARE FAMILIAR WITH THE ROOM, YOU HAVE BEEN THERE OVER

02:32:03 12   THE LAST TWO WEEKS AS A PLACE TO LEAVE YOUR THINGS AND TO

02:32:06 13   GATHER.

02:32:07 14   WHILE YOU ARE DELIBERATING, THE DOOR TO THE JURY ROOM WILL

02:32:10 15   BE CLOSED. NO ONE MAY ENTER THE JURY ROOM EXCEPT THE EIGHT

02:32:15 16   JURORS.

02:32:15 17   NOW, MS. SALINAS-HARWELL IS GOING TO BRING SOME THINGS IN

02:32:20 18   TO YOU TO BEGIN WITH BECAUSE THOSE ARE THINGS YOU NEED AND

02:32:23 19   SHE'S GOING TO SET UP THE EXHIBITS FOR YOU ON THE A COMPUTER.

02:32:26 20   BUT OTHERWISE, YOU ARE NOT TO LET ANYONE IN THE ROOM. AND IF

02:32:30 21   SOMEONE ELSE IS IN THE ROOM, INCLUDING MS. SALINAS-HARWELL, YOU

02:32:33 22   ARE NOT TO DELIBERATE, DISCUSS THE CASE IN ANY WAY AMONG

02:32:36 23   YOURSELVES OR ASK HER ANY QUESTIONS.

02:32:38 24   IN ADDITION TO THAT, THE UNITED STATES MARSHAL COURT

02:32:42 25   SECURITY OFFICER WILL BE POSTED OUTSIDE YOUR DOOR. SO THAT HAS

02:32:47 1   TWO EFFECTS.

02:32:48 2   FIRST, IT PROTECTS YOUR DELIBERATIONS SO NO ONE CAN COME

02:32:51 3   IN. SECOND, IT PROTECTS YOUR DELIBERATIONS SO NO ONE CAN COME

02:32:55 4   OUT. SO I NEED TO BE SURE THAT IF YOU ARE DELIBERATING, THAT

02:33:01 5   ALL OF YOU ARE IN THE ROOM.

02:33:03 6   AND SO YOU ARE IN CHARGE OF YOUR SCHEDULE. I'M GOING TO

02:33:08 7   ASK THAT YOU WORK OUR NORMAL COURT DAY, SO THAT YOU CAN MOVE

02:33:12 8   ALONG TO CONCLUDE THIS CASE IN AN EFFICIENT MANNER. BUT YOU

02:33:18 9   MAY TAKE BREAKS AND YOUR LUNCH BREAK WHENEVER IT'S APPROPRIATE.

02:33:23 10   IF SOMEONE NEEDS TO MAKE A PHONE CALL OR LOOK AT THEIR

02:33:27 11   E-MAIL, YOU HAVE TO TAKE A BREAK, IT'S COMPLETELY FINE.

02:33:30 12   EVERYONE LEAVES THE JURY ROOM. THE COURT SECURITY OFFICER

02:33:33 13   KNOWS THAT. YOU GO OUT IN THE HALLWAY, YOU TAKE YOUR BREAK,

02:33:37 14   YOU LET HIM OR HER KNOW WHEN YOU ARE COMING BACK, THAT'S FINE.

02:33:41 15   NO ELECTRONIC DEVICES CAN BE USED IN THE JURY ROOM. NOW,

02:33:45 16   MANY JUDGES CONFISCATE ELECTRONIC DEVICES DURING DELIBERATIONS.

02:33:50 17   I'VE NEVER DONE IT, AND I'VE NEVER HAD A PROBLEM. BUT I'M

02:33:54 18   GOING TO ASK EACH OF YOU TO BE AWARE OF WHAT YOUR FELLOW JURORS

02:33:58 19   ARE DOING, AND IF YOU SEE ANYONE EVEN LOOKING AT A TEXT MESSAGE

02:34:01 20   WHILE YOU ARE IN THE JURY ROOM, I NEED TO KNOW IMMEDIATELY.

02:34:04 21   AND I WILL TAKE ALL OF YOUR DEVICES AWAY FROM ALL OF YOU WHILE

02:34:08 22   YOU ARE DELIBERATING.

02:34:09 23   I HAVE BEEN DOING THIS FOR OVER 15 YEARS AND I'VE NEVER

02:34:13 24   HAD TO CONFISCATE, I KNOW YOU WON'T LET ME DOWN ON THIS AND I

02:34:16 25   KNOW NONE OF YOU WANTS TO BE PUTTING YOUR PHONES IN A BOX FOR

02:34:20 1   THE MARSHAL WHILE YOU ARE IN THERE, SO I'M SURE THAT WILL BE

02:34:23 2   FINE.

02:34:24 3   LET ME TELL YOU ABOUT THE EXHIBITS. YOU'VE NOTICED THERE

02:34:27 4   ARE A FEW OF THEM HERE AND WE'VE DEALT WITH THEM IN PAPER FORM

02:34:30 5   THROUGHOUT THE TRIAL FOR THE WITNESSES. YOU'VE SEEN THEM ON A

02:34:34 6   SCREEN. AND I BELIEVE YOU HAVE CERTAIN EXHIBITS IN YOUR

02:34:37 7   BINDERS, ALTHOUGH I DON'T HAVE A BINDER BECAUSE I DON'T NEED TO

02:34:41 8   SEE THAT.

02:34:41 9   WHEN YOU ARE IN THE JURY ROOM, THERE WILL BE A COMPUTER

02:34:45 10 THAT ONLY ACCESSES THE EXHIBITS, IT'S NOT AN INTERNET-CONNECTED

02:34:51 11 COMPUTER. AND YOU WILL HAVE A LIST OF ALL OF THE EXHIBITS

02:34:55 12 ADMITTED. AND SO YOU CAN HAVE ACCESS TO ALL OF THE EXHIBITS.

02:35:01 13   IF YOU FIND THAT THERE IS AN EXHIBIT YOU WOULD LIKE TO SEE

02:35:04 14 IN PAPER FORM, PLEASE SEND ME A NOTE, BECAUSE GUESS WHAT, I'VE

02:35:08 15 GOT THEM ALL HERE, BUT IF I SEND ALL THESE EXHIBITS INTO THE

02:35:11 16 JURY ROOM YOU WON'T FIT IN THE JURY ROOM.

02:35:15 17   SO I LEAVE THAT TO YOU, DON'T HESITATE TO ASK ME FOR THAT.

02:35:19 18   NOW I ALSO MENTIONED THAT YOU ARE GOING TO HAVE THE JURY

02:35:23 19 INSTRUCTIONS IN THE JURY ROOM. I GENERALLY SEND IN TWO COPIES

02:35:26 20 OF THE FULL SET OF JURY INSTRUCTIONS. BUT IF YOU WANT MORE,

02:35:30 21 JUST LET ME KNOW. YOU HEARD ME READ THEM, YOU KNOW IT'S A BIG

02:35:33 22 LIST. SO IF YOU WANT MORE COPIES, LET ME KNOW.

02:35:36 23   IF THERE'S A PARTICULAR INSTRUCTION YOU WANT MORE COPIES

02:35:39 24 OF, YOU LET ME KNOW THAT. IT'S UP TO YOU. AND YOU'VE SEEN --

02:35:44 25 YOU'VE LISTENED TO ALL THE INSTRUCTIONS.

02:35:46 1	NOW, YOU REMEMBER THAT I READ SOME INSTRUCTIONS AT THE
02:35:49 2	BEGINNING AND I READ SOME TODAY. SO ALTHOUGH IT'S ONE SET OF
02:35:53 3	INSTRUCTIONS, YOU WILL SEE THAT THERE'S A PAGE BREAK FOR THE
02:35:56 4	PRELIMINARY INSTRUCTIONS AND THE FINAL ONES. THAT JUST MEANS I
02:36:00 5	READ THEM FIRST, I READ THEM LAST, THERE'S NOTHING ELSE ABOUT
02:36:03 6	THAT. BUT YOU WILL HAVE ALL OF THOSE INSTRUCTIONS.
02:36:09 7	NOW LET ME TELL YOU A LITTLE BIT ABOUT THE VERDICT FORM.
02:36:15 8	BOTH OF THE LAWYERS SHOWED YOU ON THE SCREEN, PAGES AT A
02:36:19 9	TIME FROM THE VERDICT FORM. IT'S A DOCUMENT, IT'S GOING TO BE
02:36:23 10	STAPLED TOGETHER. AND IT HAS THE QUESTIONS THAT YOU SAW, THEY
02:36:28 11	WENT BY A LITTLE BIT QUICKLY, AND BLANK SPACES FOR YOU TO MARK
02:36:32 12	IT, IF AND WHEN YOU REACH A UNANIMOUS VERDICT.
02:36:36 13	NOW, WHEN YOU HAVE A QUESTION THAT IS YES OR NO, IT TAKES
02:36:42 14	EIGHT VOTES TO VOTE YES, IT ALSO TAKES EIGHT VOTES TO VOTE NO.
02:36:47 15	AND IF YOU ARE DIVIDED, YOU MARK NOTHING UNTIL AND UNLESS YOU
02:36:52 16	CAN REACH EIGHT VOTES FOR ONE OR THE OTHER.
02:36:57 17	NOW THE VERDICT FORM STARTS AT NUMBER 1, THEY ALL DO, BUT
02:37:01 18	THIS IS NOT RANDOM ACCESS. YOU DON'T SKIP ONE BECAUSE YOU
02:37:05 19	CAN'T DECIDE AND GO TO THE NEXT. YOU STAY ON THE FIRST ONE
02:37:08 20	UNTIL YOU CAN'T FINISH IT, WITH THE EXCEPTION THAT THERE'S THE
02:37:12 21	COPYRIGHT QUESTIONS AND THE PATENT QUESTIONS.
02:37:15 22	SO YOU CAN DO -- IF YOU ARE UNABLE TO COMPLETE ALL OF THE
02:37:20 23	QUESTIONS ON COPYRIGHT, YOU CAN STILL GO TO PATENT. IF YOU
02:37:23 24	COMPLETE ALL OF THE QUESTIONS ON COPYRIGHT, YOU STILL GO TO
02:37:27 25	PATENT. AND IT DESCRIBES THAT FOR YOU.

02:37:30 1   I'M ALSO GOING TO GIVE EACH OF YOU YOUR OWN PERSONAL PAPER

02:37:36 2 COPY OF THE VERDICT FORM. PLUS, THERE WILL BE THE ORIGINAL

02:37:43 3 OFFICIAL VERDICT FORM THAT YOUR PRESIDING JUROR WILL TAKE CARE

02:37:47 4 OF. THAT ONE IS NOT TO BE MARKED UNTIL THERE'S A UNANIMOUS

02:37:54 5 VOTE. BUT I WANT EACH OF YOU TO KNOW EXACTLY WHAT YOU ARE

02:38:01 6 VOTING ON.

02:38:02 7   AND I HAVE ANOTHER REASON FOR YOU HAVING YOUR OWN COPY,

02:38:06 8 WHICH I WANT YOU TO BRING BACK INTO THE COURTROOM AT THE END OF

02:38:08 9 THE TRIAL. THE ATTORNEYS HAVE THE RIGHT -- THE PARTIES HAVE

02:38:09 10 THE RIGHT TO ASK EACH OF YOU TO STATE IN OPEN COURT HOW YOU

02:38:12 11 VOTED ON EACH QUESTION.

02:38:15 12   IN EVERY CASE I'VE EVER HAD, THE PARTIES ASK FOR WHAT'S

02:38:18 13 CALLED POLLING OF THE JURY. AND SO I WANT TO BE SURE THAT WHEN

02:38:23 14 I ASK YOU THE QUESTION AND HOW YOU VOTED, THAT YOU KNOW HOW YOU

02:38:25 15 VOTED.

02:38:26 16   SO YOU CAN MARK YOUR PERSONAL ONE ANY WAY YOU WANT, BUT I

02:38:30 17 WANT TO MAKE SURE THAT YOU UNDERSTAND THAT AT THE END OF THE

02:38:34 18 CASE, YOU MAY BE ASKED TO STATE IN OPEN COURT HOW YOU VOTED ON

02:38:38 19 EACH QUESTION, AND I WANT TO GIVE YOU THE BEST OPPORTUNITY TO

02:38:43 20 BE ABLE TO ACCURATELY TELL US WHAT YOUR VOTE IS. SO THAT'S THE

02:38:46 21 PURPOSE OF THAT.

02:38:46 22   BUT FOR THE ONE OF YOU WHO IS ELECTED PRESIDING JUROR,

02:38:50 23 THAT ONE WE KEEP IN, I DON'T KNOW WHETHER WE PUT IT, I THINK IN

02:38:54 24 A BINDER, DON'T MARK IT UNTIL YOU'VE GOT UNANIMOUS ON THE ONE

02:38:59 25 ANSWER OR THE OTHER.

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02:39:00   1         AND THEN THAT ONE WILL STAY CLEAN, BUT THE OTHERS YOU CAN

02:39:04   2   MARK ANY WAY THAT YOU WANT.

02:39:11   3         I THINK THAT PROBABLY TAKES CARE OF EVERYTHING.  NOW, I

02:39:15   4   NEVER XEROX THIS UNTIL I SEND YOU IN BECAUSE SOMETIMES I HAVE

02:39:21   5   TO MAKE CHANGES IN THE INSTRUCTIONS AS I GO ALONG.  THESE I

02:39:24   6   DIDN'T CHANGE.  WE HAVE A LOT OF XEROXES TO DO, IT'S GOING TO

02:39:28   7   TAKE A LITTLE BIT OF TIME.  BUT AS I SAID, IN THE JURY

02:39:30   8   INSTRUCTIONS, THE FIRST THING YOU ARE GOING TO DO IS ELECT YOUR

02:39:33   9   PRESIDING JUROR.  IT'S COMPLETELY UP TO YOU, ANY ONE OF YOU MAY

02:39:38  10   SERVE AS A PRESIDING JUROR, AND IT'S THE CHOICE OF THE GROUP.

02:39:42  11   BUT LET ME MAKE A FEW SUGGESTIONS AS YOU ARE CONSIDERING IT.

02:39:45  12         THE JOB OF THE PRESIDING JURY OUR IS TO ORGANIZE THE

02:39:48  13   DISCUSSION, TO MAKE SURE THAT THE DISCUSSION IS FAIR TO

02:39:51  14   EVERYONE THERE.

02:39:54  15         AND BY THAT I MEAN, WE'VE ALL BEEN IN GROUPS BEFORE,

02:39:56  16   WHETHER IT WAS IN SCHOOL, SOMETIMES IT'S AT JOBS, SOMETIMES

02:40:00  17   IT'S JUST AT GATHERING WHERE PEOPLE ARE HAVING A DISCUSSION,

02:40:02  18   AND THERE ARE ALWAYS THE EAGER BEAVERS WHO ARE GOING TO SAY

02:40:05  19   WHAT'S ON THEIR MIND NO MATTER WHAT.  I MEAN, THEY'VE GOT SHARP

02:40:10  20   ELBOWS, YOU KNOW THE TYPE.

02:40:11  21         BUT THEN THERE ARE PEOPLE WHO ARE VERY THOUGHTFUL AND

02:40:13  22   DON'T CHOOSE TO SPEAK UNTIL IDEAS ARE REALLY FORMULATED.  AND

02:40:17  23   IF SOMEONE WITH SHARP ELBOWS SPEAKS UP BEFORE THEY GET TO, SOME

02:40:24  24   PEOPLE SAY AH, NEVER MIND.

02:40:25  25         SO A GOOD PRESIDING JUROR IS GOING TO NOTICE WHEN THAT
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02:40:28   1   QUIETER JUROR HAS MADE SOME GESTURE OF WANTING TO SPEAK AND

02:40:32   2   MAKE A NOTE OF IT AND COME BACK TO THAT PERSON TO CALL TO THAT

02:40:36   3   PERSON TO GIVE THEM THE FLOOR TO SPEAK.

02:40:38   4   THAT IS THE KIND OF PRESIDING JUROR YOU MAY WISH TO

02:40:41   5   CONSIDER. BUT IT'S COMPLETELY UP TO YOU. I JUST WANT TO MAKE

02:40:45   6   SURE THAT EACH OF YOU HAS AN OPPORTUNITY TO SAY WHAT YOU WANT

02:40:47   7   AND THAT THE DISCUSSION IS ORGANIZED AND THOROUGH. BUT WHAT

02:40:52   8   THAT MEANS IS BEHIND YOUR CLOSED DOOR, AND I'M NOT PART OF

02:40:55   9   THAT.

02:40:55   10 THE LAST THING I WANT TO TALK ABOUT ARE QUESTIONS THAT YOU

02:40:58   11 MIGHT SEND OUT. TYPICALLY IN THE PACKET OF MATERIALS, I SEND

02:41:02   12 YOU THREE BLANK QUESTION FORMS. SO AT THE TOP IS FOR YOUR

02:41:07   13 QUESTION, WHICH I NEED IN WRITING. AND THERE ARE BLANK LINES

02:41:11   14 FOR IT. PLEASE JUST GIVE ME ONE QUESTION PER PAGE. I WILL

02:41:15   15 GIVE YOU GENERALLY THE ANSWER IN WRITING ON THE BOTTOM HALF.

02:41:19   16 EVERY ONCE IN A WHILE THE QUESTION REQUIRES YOU TO COME

02:41:22   17 BACK INTO THE COURTROOM, AND IF THAT'S THE CASE, THE ANSWER

02:41:26   18 WILL BE, I WOULD LIKE YOU TO RETURN TO THE COURTROOM. AND THAT

02:41:28   19 WILL BE FINE.

02:41:29   20 THE REASON I WANT THE QUESTIONS ON SEPARATE PAGES IS I

02:41:33   21 WANT THE RECORD TO BE CLEAR WHAT MY RESPONSE IS. AND I WANT TO

02:41:36   22 HAVE ENOUGH ROOM TO GIVE IT IF IT'S GOING TO BE LENGTHY.

02:41:41   23 SO THE FACT THAT I GIVE YOU THREE BLANK QUESTION FORMS

02:41:44   24 DOESN'T MEAN YOU SHOULD HAVE THREE QUESTIONS, YOU MIGHT HAVE

02:41:46   25 NONE, YOU MIGHT HAVE MORE. IT'S JUST MY STANDARD PACKET. I

02:41:50 1   DON'T MEAN ANYTHING BY IT EXCEPT TO GET YOU STARTED.

02:41:53 2   NOW THE PRESIDING JUROR CAN WRITE THE QUESTION OUT. BUT

02:41:56 3   THE PRESIDING JUROR CANNOT PREVENT THE JURY FROM SENDING

02:42:00 4   QUESTIONS OUT. AND YOU HEARD THAT IN THE INSTRUCTION.

02:42:04 5   SO I WANT TO BE CLEAR THAT IF THERE'S A QUESTION THAT

02:42:07 6   CANNOT BE CONSIDERED AMONG YOURSELVES, ANY JUROR MAY SEND A

02:42:10 7   QUESTION OUT, AND THAT CAN BE AT ANY TIME.

02:42:14 8   AS I SAID IN THE INSTRUCTION, PLEASE KEEP WORKING. THE

02:42:18 9   LAWYERS NEED TO COME IN, WE NEED TO DISCUSS IT, AND SOMETIMES

02:42:23 10   IT TAKES ME SOME TIME TO DEVELOP THE ANSWER PROPERLY. IT

02:42:29 11   DOESN'T MEAN THE ANSWER IS GOING TO BE LONG, IT JUST MAY BE

02:42:32 12   DIFFICULT. SO KEEP WORKING.

02:42:33 13   AND IF I FIND IT'S GOING TO TAKE ME SOME TIME, EVERY ONCE

02:42:37 14   IN A WHILE I REALIZE I NEED TO GIVE YOU THAT INFORMATION, I

02:42:40 15   MIGHT TELL YOU THIS IS GOING TO TAKE X AMOUNT OF TIME.

02:42:43 16   SO I WILL JUST KEEP YOU INFORMED THAT WAY. BUT I DON'T

02:42:45 17   WANT YOU WAITING. AND SO YOU CAN DO THAT.

02:42:49 18   NOW, WHEN YOU TAKE YOUR BREAKS AND AS I SAID, IT'S

02:42:52 19   COMPLETELY UP TO YOU, TAKE YOUR LUNCH BREAKS, BRING YOUR LUNCH

02:42:56 20   IN, WHATEVER YOU WANT TO DO, YOU CAN'T DELIBERATE WHILE YOU ARE

02:42:59 21   OUT OF THE JURY ROOM. AND IF TWO OR THREE OF YOU GO HAVE LUNCH

02:43:04 22   TOGETHER, THAT'S GREAT, TALK AMONG YOURSELVES AS YOU HAVE BEEN

02:43:07 23   DOING, BUT YOU CAN'T DELIBERATE. YOU CAN'T TALK ABOUT THE

02:43:11 24   EVIDENT, YOU CAN'T TALK ABOUT THE CASE, JUST LIKE I'VE SAID,

02:43:14 25   EVEN THOUGH YOU ARE DELIBERATING JURORS. SO PLEASE KEEP THAT

02:43:18 1   IN MIND.

02:43:19 2   NOW WHEN YOU ARE IN THE HALLWAYS IN THE COURT, YOU SEE

02:43:21 3   THERE ARE A LOT OF PEOPLE HERE WHO ARE INTERESTED IN THE CASE,

02:43:24 4   YOU MAY THINK YOU ARE OVERHEARING SOMETHING ABOUT THE CASE,

02:43:27 5   PLEASE WALK AWAY IF YOU THINK YOU ARE HEARING SOMETHING.

02:43:31 6   WEAR YOUR JURY BADGES PLEASE WHILE YOU ARE IN THE

02:43:35 7   COURTHOUSE SO THAT OTHERS CAN RECOGNIZE THAT YOU ARE A

02:43:38 8   DELIBERATING JUROR AND THEY SHOULD WALK AWAY FROM YOU. AND

02:43:41 9   PEOPLE UNDERSTAND THAT, BUT CLOSE QUARTERS, COLD OUTSIDE, YOU

02:43:45 10   KNOW, IT GETS TO BE SOMETIMES PEOPLE OVERHEAR THINGS THEY ARE

02:43:48 11   NOT SUPPOSED TO. SO WE WILL KEEP THAT IN MIND AS WELL.

02:43:52 12   SO WITH THAT, LADIES AND GENTLEMEN, AND COUNSEL, IF

02:43:54 13   THERE'S NO REASON FOR ME NOT TO EXCUSE THE JURY TO

02:43:59 14   DELIBERATIONS NOW, I WOULD LIKE TO DO THAT.

02:44:01 15   MR. VAN NEST: YOU MAY, YOUR HONOR. THANK YOU.

02:44:02 16   MR. NELSON: THAT WOULD BE GREAT, YOUR HONOR.

02:44:03 17   THE COURT: THANK YOU.

02:44:04 18   ALL RIGHT. TAKE YOUR NOTEBOOKS AND YOUR BINDERS AND YOUR

02:44:09 19   BADGES. AND I WILL BE HERE ALL DAY WITH YOU, BUT YOU WON'T SEE

02:44:13 20   ME UNLESS YOU COME BACK IN THE COURTROOM.

02:44:16 21   (JURY OUT AT 2:44 P.M.)

02:44:19 22   THE COURT: ALL RIGHT. PLEASE BE SEATED, EVERYONE.

02:44:49 23   WE ARE BACK ON THE RECORD OUTSIDE THE PRESENCE OF THE

02:44:52 24   JURY.

02:44:52 25   ALL RIGHT. COUNSEL, I WILL BE IN TOUCH WITH YOU AS

11:47:41 1   CISCO'S PROPOSED JURY INSTRUCTIONS, WHICH THE COURT REVIEWED

11:47:45 2   WITH COUNSEL ON NOVEMBER 22ND, THE COURT RULED THAT IT WOULD

11:47:50 3   ADOPT CISCO'S VERSION OF THE PROPOSED JURY INSTRUCTION 61.

11:47:58 4   VERSION 3, SUBMITTED BY THE PARTIES, OF THE JURY

11:48:01 5   INSTRUCTIONS, INCLUDED AN IDENTICAL PROPOSAL BY CISCO FOR

11:48:06 6   INSTRUCTION NUMBER 61. AND THAT'S WHAT THE COURT ADOPTED.

11:48:11 7   THEREAFTER, AS THE PARTIES CONTINUED TO DISCUSS THE JURY

11:48:20 8   INSTRUCTIONS, THE COURT RECEIVED, AS A FINAL JURY INSTRUCTION,

11:48:24 9   INSTRUCTION NUMBER 61 WITH SOME MINOR CHANGES IN IT THAT THE

11:48:28 10   COURT HAD NEVER BEEN ASKED TO CONSIDER.

11:48:30 11   AND THEY WERE SUBMITTED BY STIPULATION OF THE PARTIES AND

11:48:33 12   ADOPTED BY THE COURT ON THAT BASIS, AND ON THE FOUNDATION OF

11:48:38 13   THE COURT APPROVING, WITHOUT MODIFICATION, CISCO'S PROPOSED

11:48:42 14   INSTRUCTION NUMBER 61.

11:48:45 15   AS TO QUESTION 2 ON THE VERDICT FORM, WITH THE EXCEPTION

11:48:49 16   OF MOVING THE AFFIRMATIVE DEFENSES OF ABANDONMENT AND COPYRIGHT

11:48:56 17   MISUSE TO QUESTION NUMBER 5, THE COURT ALSO INFORMED THE

11:48:59 18   PARTIES THAT IT WOULD ADOPT CISCO'S VERSION OF THE VERDICT

11:49:04 19   FORM. I HAD DONE THAT BY AN E-MAIL TO THE PARTIES IN ADVANCE.

11:49:08 20   THEREAFTER, WHEN THE PARTIES SUBMITTED TO THE COURT THE

11:49:11 21   FINAL VERDICT FORM, QUESTION 2 HAD MODIFIED, BUT IT WAS

11:49:16 22   SUBMITTED TO THE COURT BY THE STIPULATION OF THE PARTIES, AND

11:49:19 23   THE COURT ADOPTED IT AS STIPULATED AND PRESENTED IT TO THE

11:49:24 24   COURT WITHOUT OBJECTION.

11:49:25 25   SO THAT IS MY RECORD, WHILE IT'S FRESH IN MY MIND, BECAUSE

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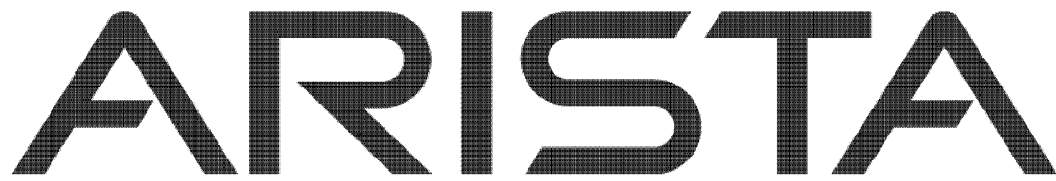
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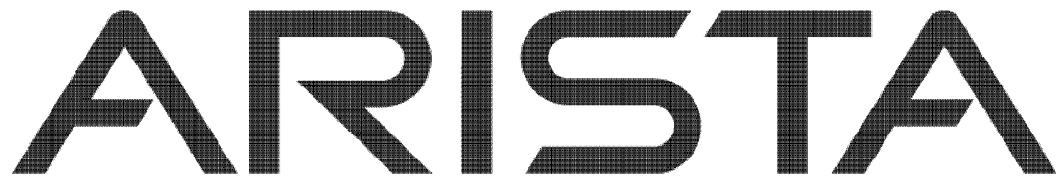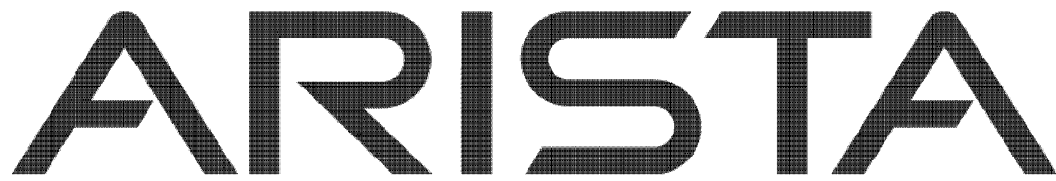
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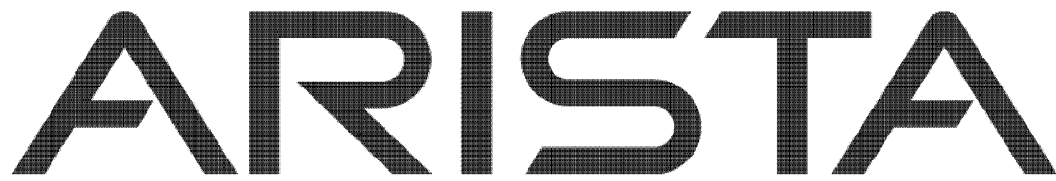
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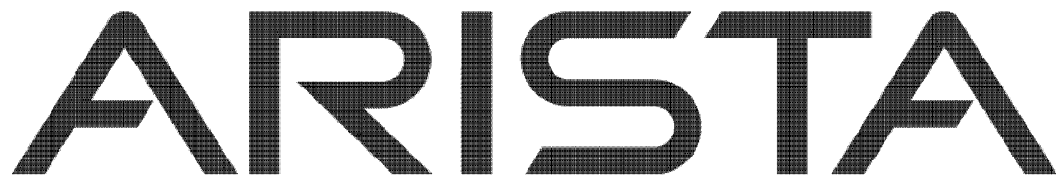
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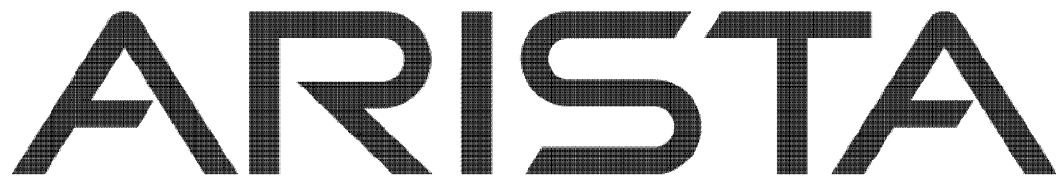
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User Manual

Arista Networks

www.arista.com

Arista EOS version 4.14.3F – Rev. 2
2 October 2014
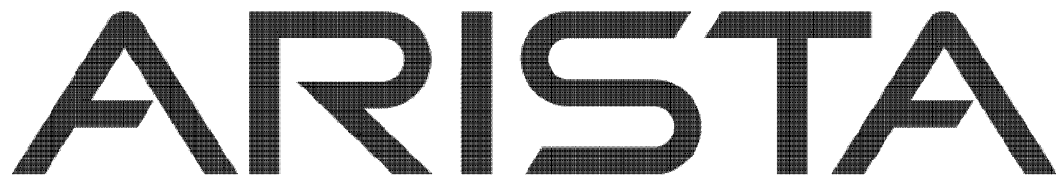
ARISTA

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Arista EOS version 4.14.5F – Rev. 2
22 December 2014
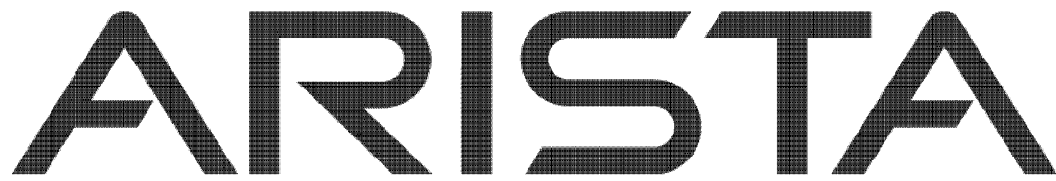
ARISTA

User Manual

Arista Networks

www.arista.com

Arista EOS version 4.14.6M
19 January 2015

Appx33623
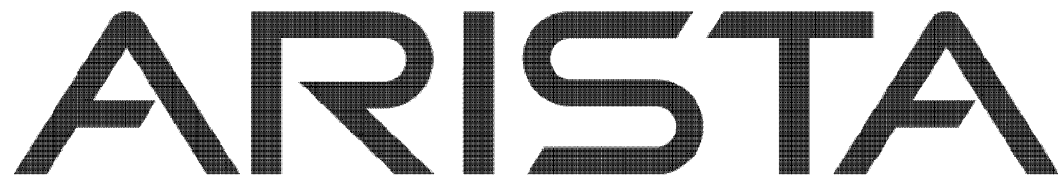
User Manual

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Arista EOS version 4.15.0F – Rev. 2
27 April 2015

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Arista EOS version 4.15.0F
18 April 2015

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Arista Networks

www.aristanetworks.com

Arista EOS version 4.13.6F
14 April 2014

User Manual

Arista Networks

www.arista.com

Arista EOS version 4.15.4F
5 February 2016

Appx42567

From: Kenneth Duda <kduda@aristanetworks.com>
Sent: Tuesday, July 21, 2009 8:56 AM
To: Anshul Sadana
Cc: Sean Hafeez; Adam Sweeney; Software
Subject: Re: Opinions wanted on ACL cli functionality

I wanted to expand on one aspect of Anshul's comments.

Anshul is exactly right that we have decided to embrace the IOS CLI and must be consistent with that. That means we must support Cisco-style ACLs no matter how much we don't like them. Customers clearly appreciate our rigor in sticking with the industry standard here.

> All improvements on top of Cisco's syntax are fine and will be
> appreciated by customers.

Exactly. Nothing about this argument prevents us from doing additional work to provide an alternate model. It is worth modest investment to improve beyond the industry standard; for example, we have a boot loader where you can use wget to suck in a new image.
This was pretty easy for us to do and has won us points with some customers.

So I encourage the ACL team to look at if there is an easy way to go beyond the industry standard in the first release.

   -Ken

On Tue, Jul 21, 2009 at 1:09 AM, Anshul
Sadana<asadana@aristanetworks.com> wrote:
> Sean,
>
>
>
> We are all in agreement that Cisco's user interface was not the greatest.
>
>
>
> Having a better ACL UI will not lead in a lot of additional business
> for Arista. At the same time, doing something very different adds
> additional risk and we may lose business.
>
> Hence we don't have much room to innovate here or the resources to
> duplicate our effort (and do both).
>
>
>
> I wanted to reiterate the general model we have been following: We've
> picked Cisco IOS as the CLI model for our products. JunOS may be a lot
> better, but we decided to embrace IOS.

1

Appx45468   ARISTANDCA10499890

>
> Remember that one of our selling points against BNT is that their CLI
> is a mix of Nortel, CatOS & IOS – and that matters to customers. We
> can't go down the same path ourselves.
>
>
>
> All improvements on top of Cisco's syntax are fine and will be
> appreciated by customers.
>
>
>
> Thanks,
>
> Anshul
>
>
>
>
>
> From: Sean Hafeez [mailto:sah@aristanetworks.com]
> Sent: Tuesday, July 21, 2009 12:40 AM
> To: Anshul Sadana
> Cc: Adam Sweeney; Software
>
> Subject: Re: Opinions wanted on ACL cli functionality
>
>
>
> Can we please drop the line number is this type if ACL part of the
> Cisco madness? IOS ACLs are a mess and even Cisco wants to change
> them. I know of no one that likes them. Can we follow JUNOS here
> atleast? Also if we must keep line numbers fine but there is still no reason we cannot do the editor.
> Anshul I understand the business case for staying IOS like but I feel
> very strongly that this is an area we can do much better.
>
> Sent from my iPhone
>
> On Jul 21, 2009, at 1:14, "Anshul Sadana" <asadana@aristanetworks.com>
> wrote:
>
> Yes, picking the best of IOS, NxOS & IOS-XR will certainly work.
>
>
>
> I think customers will like the approach of not applying ACLs line by
> line as you type it in. This will be even relevant to our platform as
> we have a smaller TCAM and try to fit the new ACL before deleting the
> old one (for Atomic updates).
>
>
>

2

> Hence if we stay with Cisco's syntax and best of breed
> features/usability, that will work well. We just want to leverage all
> the partner training that Cisco does ;-)
>
>
>
> Thanks,
>
> Anshul
>
>
>
>
>
> From: Adam Sweeney [mailto:asweeney@aristanetworks.com]
> Sent: Monday, July 20, 2009 9:26 PM
> To: Anshul Sadana
> Cc: Software
> Subject: Re: Opinions wanted on ACL cli functionality
>
>
>
> Thanks, Anshul.
>
> I don't think we'll be able to do both a good editor version and a
> good sequence number version. For now, that means we'll do a good
> sequence number version. I think we can at least consider a couple of
> things to improve the sequence number version.
>
> 1. The acl will not be applied until you exit acl editing mode or you
> commit it explicitly. You'll be able to abort your changes with an 'abort'
> command and see the pending changes with a 'show pending' command. If
> we get fancy, maybe we can add a diff command.
>
> 2. I think we can at least investigate what it would take to support
> reverting back to an old version of an acl. Someone mentioned that
> nxos has added some functionality like this, and it seems pretty
> handly. Sean tells me people mess up their acls all the time.
>
> The editor idea will have to become a future intern project :-).
>
> Adam
>
>
> On Mon, Jul 20, 2009 at 7:10 PM, Anshul Sadana
> <asadana@aristanetworks.com>
> wrote:
>
> Hi Adam, all,
>
>
>

3

Appx45470   ARISTANDCA10499892

Packet Pushers Podcast, Show 45: Arista — EOS Network Software Architecture — Webinar, May 24, 2011 (54:45 — 55:46)

Available at http://packetpushers.net/podcast/podcasts/show-45-arista-eos-software-architecture/

Host 1:   Why does Arista have such a progressive and adaptable OS and chose a legacy CLI interface?

Duda: Oh, that's—that's very simple. We want to minimize the transition costs to our customers. Our customers come very well trained, big staffs of people who understand that—that particular CLI, and we actually copied it slavishly.

Ya' know, it's like even the things we thought were really silly, we went ahead and copied them anyway, because we wanted it to be as seamless an experience for our customers as possible.

And something I'm still hoping an enterprise customer—an enterprising customer will do—our CLI is just—is just like the shell, right? Just like UNIX supports multiple shells, there's no reason why EOS can't have multiple CLIs. So if anybody wants to do a cool, modern CLI for EOS—hey, we're a real big fan.

Host 2:   So you want to have a Cisco CLI and a Juniper CLI?

Duda: That would be—that would be a dream come true. So any volunteers to do the Juniper CLI, I have lots of milkshakes here and would be very happy to finance the activity that way.

EOS CLI Conventions and Style Guidelines

Introduction

The Arista EOS command line interface closely follows the industry standard command line interface in its syntax and behavior. This makes it easier for our customers to use an EOS device with little or no training, since most of them are already familiar with the industry standard. In many cases, the functionality we are building is already present in the industry standard, and our customers benefit when we use the same configuration and show commands. As we add more functionality to EOS, though, we have to create our own commands for configuring and managing these new features. For those, it is important that we keep the new commands consistent in style and behavior with the rest of the CLI. This consistency makes it easier for customers to use our devices and provides a more pleasant experience in doing so.

This document specifies many of the conventions we use in adding commands to our CLI. These are guidelines, not laws, though, so we still have to think as we add new commands. One rule we try hard to follow is to review new CLI commands on the cli-review@ mailing list. When you are coming up with a new set of commands for managing a new feature, please send your proposal to cli-review@. Please do this early in the process, as our experience with this is that many proposals change significantly during the discussion. See the section on sending requests to cli-review@ for some tips on how to do this successfully.

Some Philosophy

Our style of configuration CLI has a bit of a philosophy behind it. Configuration commands are attribute-oriented. The commands set attributes to values or unset them back to a default value. Much like with our attribute-oriented programming style, this means that configuration commands are named as nouns, not verbs. Just like in attribute-oriented programming, we are specifying the configuration state with our commands, not specifying how or when the switch should implement the behavior needed to be consistent with that configuration state.

The configuration CLI is also object-oriented. In many cases, we use a configuration sub-mode to create an object and configure attributes of that object. Interface mode is the most obvious example. We configure the attributes of an interface by entering interface mode using the interface name as a key and then applying commands that apply to that interface object. The alternative is to use global commands that name the object whose attribute is being assigned to a new value. There are examples in the CLI that do this, the IGMP Snooping feature is a prominent example, but we are trying to avoid that pattern and follow the object-oriented, mode-

Appx45604

oriented model instead.

Conventions and Guidelines

Don't Change Existing Commands

Once a command is shipped to customers, whether a config command or a show command, we should be very reluctant to change it. For config commands, changes introduce painful compatibility issues. We have to worry about compatibility with startup config files generated by an old release and being parsed by the new release. We also have to worry about startup config files generated by the new release and being parsed by an old release after a downgrade. This is a real pain to manage, and it is almost never the case that the right answer is to change the existing configuration commands.

We used to have more flexibility with show commands. Now, though, we use our show commands as operations for the HTTP-JSON Commands EAPI, so the commands are getting hard coded into programs used to monitor our switches. Breaking those programs must be a last resort.

If you think you should change the syntax of an existing command, please try to come up with some way not to do so. Then raise the issue on cli-review@, and be very explicit about the fact that you are considering changing the syntax of an existing command. These changes must get serious consideration from multiple people before going through.

Follow the Industry Standard

The first and probably most important convention in our CLI is to follow the industry standard. If the commands for a given feature are already out there in the industry, we don't add value by coming up with another command model that is similar but different. All we accomplish in doing that is to make it harder for our customers to learn how to use our switches and routers.

In looking for industry standard models to follow, please look in the following order of preference: IOS, NX-OS, IOS-XR, JunOS.

If the industry standard CLI model is truly terrible, we can look at deviating from it. This doesn't happen very often, but like most of our rules at Arista, even this one is open to using our judgment.

Avoid "enable" and "disable" keywords

The "enable" and "disable" keywords are strongly frowned upon in industry standard style CLI. It is true that some of them have crept in over the years, but that doesn't mean we should add more. Try hard to find ways to express your configuration in a way that doesn't require an on/off switch. When one is required, the "[no] shutdown" pattern is generally the right answer.

Appx45605

I think this really originated with the 'enable' keyword being redundant. You had 'foo' and 'no foo' in the CLI, so what value does 'foo enable' add? The pattern we try to follow is that you assert that something is enabled by specifying its existence in the configuration, and you disable it by removing it from the configuration.

These cases where there are attributes of the feature to be set separately from enabling the feature seem to often put us in this case where the 'enable' keyword is tempting. We have '[no] foo' and also '[no] foo attribute <value>'. The commands really configure separate attributes in the configuration, one being the enabling of the feature and the other being some parameter used by the feature. While it can be confusing when the configuration shows 'foo attribute val1' and the feature is still disabled, I don't think adding 'enable' keywords really eliminates the potential for confusion. Usually, what you need here is a better show command that clearly states that the feature is disabled. Beyond that, we have to rely on documentation and eventually our helpful customer support folks :-).

Example

Don't copy

spanning-tree bpduguard [enable]

Instead try

spanning-tree bpduguard

The extra "enable" keywords really didn't add anything.

Avoid-excessive-dashes

It is often tempting to combine multiple words together in a CLI command using dashes, "-". While combining two words that truly form a single concept can be OK, if you find yourself combining more than two words it is likely time to think more about what you are doing. There are a couple of problems with multi-word dash separated tokens in the CLI:

- They break the CLI's ability to understand token prefixes. If there are two tokens "foo-bar" and "foo-baz" that are valid at the same level, the CLI cannot distinguish them until the first differentiating character is typed. This reduces the user's ability to shortcut tokens in the cli by typing just a unique prefix for the token and letting the parser figure out the rest.
- These just get awkward. Objects and concepts in the CLI need good names, and multi-word concoctions usually indicate that we haven't worked hard enough to come up with a good name for the thing being configured.

Example

Don't copy

ipv6 address use-link-local-only

Instead try

ipv6 address link-local

Command tokens should not be complete sentences :-).

Appx45606

Consistency is Good

Look for names and patterns in the existing CLI commands that match the problem you are trying to solve. By using consistent names for the same things in different features, we make it easy to understand what a command configures. By following the same patterns and structures, we make it easy to figure out how something should be configured.

Example

Don't copy

monitor link-flap

        enable

Instead try

monitor link-flap

        shutdown

I'm not trying to beat a dead horse here, but using "shutdown" for an explicit on/off switch, as awkward as it may seem at first, keeps our features consistent across a broad spectrum of features going back many years.

"no" and "default"

Typical configuration commands can be reverted to their default values by prefixing them with either the "no" or the "default" prefix. In most cases, be sure to support both of these for your new commands. There is a whole AID about this, AID 986, so I won't go into detail here about this topic.

Avoid New Acronyms

We try to avoid introducing new acronyms in the CLI, because only we know what they mean. Industry standard acronyms, for example "ip" and "qos", are OK, but try to avoid new ones. If we name a new feature by an acronym and document it well enough to make it a new, well known term, then we can use that, too. Be careful in doing that, though, as it can be easy to think that something is obvious when it is not.

Example

Say that you're adding a new feature "Fast Server Failure Detection", which you refer to as "FSF" internally. Instead of configuring it with:

fsf

Instead try something more spelled out:

monitor server-failure

Use Modes and Hierarchy

We are trying to avoid putting more and more commands at the global config level. When adding new commands, consider whether you are creating new configuration objects and

Appx45607

setting attributes on them. If so, look at creating a new configuration sub-mode for your commands. Even if the only object involved is the singleton configuration object of your feature, try creating a singleton mode (no "key" provided on entering it) to add your new commands within.

Multiple levels of modes are OK, too. Our support for these is improving, and they help to identify the objects being configured in the naturally nested structure of many configuration models.

Example
Don't copy
> **ip igmp snooping vlan 10**

Instead try
> **vlan 10**
>> **ip igmp snooping**

Keep Configuration Commands Order Independent

People are often tempted to protect the user by placing ordering constraints among commands in the CLI. The thinking is that if we make it so that you can't enter command X until command Y is present, we'll prevent the user from misconfiguring the switch since command X only makes sense when command Y is present. While that's true, we also introduce an ordering constraint into the startup config when we do this. One too many of these, and we have a constraint loop that we're really not going to be happy with.

Instead, we allow users to enter commands in any order. If a given command doesn't make sense yet, we just ignore the state that it configures until something else is configured and it does make sense. We don't print a warning that this is the case either, as these get obnoxious far too easily. It is important to have good show commands displaying the current operational state of each feature, so that when something is partially configured and that configuration is inactive the user can see what is actually going on.

Avoid Printing Warnings

As described above, people are often tempted to print a warning to the command line whenever the user enters a command that seems to not make sense. In general, we try to avoid doing this. These warnings might be helpful, but they can also become irritating if the user knows what they are doing. We err towards assuming that the user knows what they are doing. Our users deploy partial configurations for many reasons, so don't assume that you know better than our users and tell them a configuration is incorrect. Instead, add output into your show commands to indicate whether the current config is fully active and consistent.

Keep Commands Independent

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Just like in attribute-oriented programming, it is best if each command controls the value of a single attribute or set of attributes in the configuration and no effect on the attributes controlled by other commands. I think of this as orthogonality among commands. When a command for one configuration attribute goes and changes some other attribute, the results are usually unexpected. Surprising people in the CLI is a bad idea. This is sometimes put forward as a convenience, as in "The 'no foo' command will delete all of the foo related parameters." This is not how we like to structure things. It reduces the flexibility of the CLI in the name of convenience, which we believe is the wrong tradeoff.

Example

Today in EOS
   interface eth1
          switchport access vlan 5
creates vlan 5 if it is not already present. It just shouldn't do this. The switchport command should not be reaching around and creating vlans controlled by the vlan command.

Use Conventional Command Hierarchies

When naming a new command submode, try to see if you can follow an existing pattern and use an existing naming convention. For example, we now have several flavors of **management** config modes: **management ssh, management telnet, management defaults.** Placing the configuration of features related to the management of the switch under config modes all starting with the **management** keyword makes the similar nature of these functions obvious in the CLI.

Some other common config mode prefixes are: **interface, vlan, router, and monitor.**

Show Command Suggestions
1. Make your command work with CAPI.
2. It is often helpful to provide show commands that display the "active configuration" of your feature in addition to its runtime status. Configuration can be inactive for a number of reasons, and making it clear in a show command that the configuration is having no effect can be very useful. This is more effective than the sometimes suggested mechanisms of log messages and warnings issued as configuration is entered.
3. Try to limit the text output of your commands to 79 columns, at least in the normal case.
4. Prefer "Interface" to "Port" for labels.
5. When creating columnated show screens underline the column header.
6. Use long names 'Ethernet1/2/3' vs short name 'Et1/2/3' when space allows.

Example

```
fm225# show int et1 mac
Key:
```

Appx45609

```
L  = Rx Local Fault Reported
R  = Rx Remote Fault Reported
Last Change: Time when most recent fault status changed


                    Config Oper                       MAC              Last
Interface           State  State     PHY State        Fault           Change
------------------- ------ --------- ----------------- ----- -------------------
Ethernet1           Up     linkUp    linkUp                  4:49:02 ago
```

Tips for Sending Email to cli-review@

When you send your proposed new commands or command changes to cli-review@, please keep the readers of your email in mind. Also, the cli-review@ list is not for code reviews. It is for command syntax reviews. Please keep that in mind as you write your email.

- Clearly state whether the commands are industry standard or not. Don't make us look up your commands to figure this out.
- Clearly specify the new syntax. Don't hide it in a mess of CliPlugin tokens or broken down token by token with the help messages of each displayed.
- Don't send us a link to your review-board review. We don't want to go find your commands among a thousand lines of diffs.
- Don't send us only a link to your design document. A link can be handy, but please copy the new commands you need reviewed directly into the email you are sending.
- When asking about show commands, please provide sample command output directly in the email you are sending.
- Silence is not approval. If you don't get a response, please send an email asking for a response. If all else fails, poke asweeney@ or hzhong@ directly.
- If a conversation falls quiet, that does not necessarily mean that it has converged. People get busy. Make sure that you get a positive confirmation that your review is complete.

Appx45610

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From:	Hua Zhong [hzhong@arista.com]
Sent:	6/14/2014 2:44:49 PM
To:	Kenneth Duda [kduda@arista.com]
CC:	Yong Chen [chen@arista.com]; Michael Greenwald [greenwald@arista.com]; Andre Pech [apech@arista.com]; lag-dev [lag-dev@arista.com]; eossdk-dev [eossdk-dev@aristanetworks.com]
Subject:	Re: Some Lag issues (Daytona release)

Ken,

There is no confidential information here. We are just talking about the product behavior.

On Sat, Jun 14, 2014 at 7:37 AM, Kenneth Duda <kduda@arista.com> wrote:
Folks, let's please not discuss how NXOS works --- we do not need or want any cisco-confidential information.

Thanks,
  -Ken

Appx46038

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The pathetic state of airline travel today was predicted long ago

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#lifewelltravelled   ✈ CATHAY PACIFIC

Flashback Friday: Nasdaq hits highest point since 2000 2:26 PM EDT

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Report: Charter may revive Time Warner Cable bid 2:35 PM EDT

The hotly disputed black magic of data breach cost estimates 2:10 PM EDT
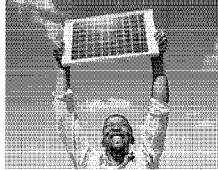
Fortune Live for April 24, 2015: Lord and Taylor, Apple Watch, and record-high Nasdaq 1:30 PM EDT

that. Cisco will come from their strength of legacy and Arista will come from its strength of novelty.
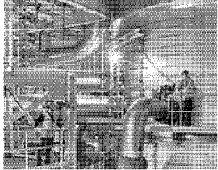
We have a great deal of respect for the company and in fact I think our approaches are entirely different. Since I helped build the enterprise, I would never compete with Cisco directly in the enterprise in a conventional way. It makes no sense. It would take me 15 years and 15,000 engineers, and that's not a recipe for success.
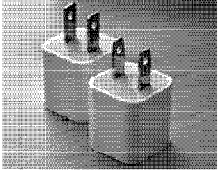
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(Hot Hardware)

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(Global Carbon Capture and Storage Institute)

12 Terrible Mistakes You Are Making With Your iPhone
(Answers.com)

```
                                0851.txt
Parser-Police Manifesto, version 1.7.1
"To Serve And Protect"
Author remaker@cisco.com
This information has been approved and recommended by the
current Parser Police team. 1/13/99


PURPOSE

Parser-police is an alias for software professionals in Cisco to
propose command line additions and get feedback from fellow
engineers with experience to insure consistency, usability, and
friendliness of the configuration interface to Cisco IOS.
It is not for discussion technical coding or parse chain issues.
Send those questions to "parser-questions."

AUTHORITY

The official design procedures for IOS *require* that
certain classes of changes be cleared with parser-police, but
in practice parser-police has no formal "clearing" criteria.  It
is a forum which has a history of preventing bad things (tm) from
getting into the command line interface (CLI).  Most of the serious
abominations in IOS did not pass the parser-police.

However, since it has no specific authority, parser-police derives
its authority by having good answers, level-headed discourse, and a
history of successes.  This does not mean it's okay to ignore
comments.  Generally, the people doing the reviews on parser-police
have more IOS CLI experience than the people behind the submission,
so this should weigh heavily in evaluating feedback on the list.

SUBMISSION

All command line interface additions, whether config, exec, or
whatever,  MUST be sent to parser-police for review.

* The submitter should send the proposed syntax BEFORE writing any
  code, to prevent rewrites for syntax changes.  "I already coded
  it" is not an acceptable excuse for poor syntax.

* The submitter should submit plain text, not pointers to specs, MIME
  attachments, diffs or parser macros.

* The submitter should make the message as brief as possible, and include
  the command syntax, what it does, and a brief reason for the choice if it
  seems that the command will be controversial.  If there were any choices
  suggested which you already know you will reject, you may want to include
  that information and reason for rejection
  to preempt replies.

* The submitter should include a pointer to a functional spec or DDTS if
  applicable  This inclusion is IN ADDITION TO and not in place of a
  summary text description as described above.

* The submitter should also include a list of target IOS versions for the new
   command so that the good folks in documentation can be sure that your
   handiwork becomes canon and not apocrypha.  Far too often, a useful
   syntax addition becomes an undocumented command because nobody
   let documentation know about it.

* The submitter should specify a DEADLINE for comments, so that the
  discussion is bounded.  Seven days is generally accepted.  A longer
                             Page 1
```

Appx46325

                                    0851.txt
   time is better. Shorter times are acceptable only in the case of high
   priority bugs which require adding a new command.

RESPONSE

Reply to submissions with respect. Finger pointing, value judgements,
and summary dismissals are uncalled for. If there is a problem,
state clearly what the problem is and OFFER AN ALTERNATIVE. If you
can cite examples in other parts of the parse tree, please do so.

In general, your reply should include parser-police. You can
privately send mail when it is a simple concurrence or a point
of information that may not be of interest to the whole group.

Please note that precedence is not always automatic grounds for
acceptance of a particular syntax, since there are a number of
places in the parse tree where bad syntax has crept in (usually due
to the fact that the syntax was not reviewed by parser-police!!).

If you cannot offer an alternative, say so. Remember since
parser-police has no specific enforceable authority per se, the
practice of conducting useful discourse ensures that the parser-police
alias will remain relevant. If you have a personal issue with
the submitter, take it to software-flame, off line or through your
management chain.

NO REPONSE

Silence is usually a sign that the command is OK. If there is no
reply after a week, please re post the message saying that you are
going ahead with the proposed syntax.

NO CONSENSUS

If the discussion deadlocks, and no resolution can be reached, the
submitter must post a summary of the discussion and the final decision.
In practice, the submitter has the choice of how to deal with feedback,
but protocol dictates that the most appropriate and professional course
of action is for the submitter to take responsibility to work for
consensus. The submitter and parser-police are JOINTLY responsible for
developing a mutually acceptable syntax. The cumulative expertise
of the parser-police is what constitutes "good" syntax. The
submitter will generally be expert on the particular application,
knowledge of the customer, etc. Each is responsible for educating
the other in order to avoid review deadlock.

If anyone receiving the submitter's "final decision" e-mail still finds
the final choice unacceptable, resolution should be pursued through
appropriate management chains, which vary widely by specific situation.
Sometimes it will be the submitters manager, or the division director,
or even the VP. Your professional judgement is your guidance here.

SYNTAX DESIGN GUIDELINES

1) Think extensible. If you add a command, try to envision if more
   similar commands that may be added, and structure the parse tree not
   to have 'dead ends'.
        BAD   dnsix-dmdp
        GOOD   dnsix dmdp
        See how dnsix-dmdp, as a top level command, precludes any other
        dnsix related commands without making a new top level command
        (which was done later, with "dnsix-nat"). If the top level
        keyword had been "dnsix", future dnsix settings could have been
                                    Page 2

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0851.txt
       added to the parse chain gracefully. This also illustrates an
       instance of the hyphens-in-commands controversy, discussed below.

2) Hyphens should be avoided if they indicate sub-keywords are
   warranted. Similarly, you should not be overzealous to eliminate
   hyphens. However, multi-hyphens are usually a sign that keywords
   are too long and the concept should be re-thought. All multi-hyphen
   commands should be analyzed to see if they can be split into a more
   extensible parse chain.

       BAD   debug [isdn-q931 | isdn-q921]
       GOOD   debug isdn [q921 | q931]
       This put logical isdn debugs under one umbrella.

       GOOD   ip forward-protocol spanning-tree
       BAD   ip forward protocol spanning tree
       This creates unneeded subsets. "forward-protocol" is one
       concept and not extensible, as is "spanning-tree"

       BAD   exec-banner, motd-banner, access-banner
       GOOD   banner [access | motd | exec]
       This logically groups all banner related commands together.

       BAD   isdn not-end-to-end [56|64]
       GOOD   isdn speed [56|64] incoming
       The not-end-to-end was a bad hack that is still in the code,
   and had a specific application. The command REALLY forced
   a speed lock regardless of the switch info. The command should
   have been named as such. Also, it only applies to inbound calls.
   In fact, it would be useful to someday have it for outbound as well,
   hence the final extension.

       BAD   all-incoming-calls-v120
       GOOD   force-bearer v120
       The "all-incoming-calls-v120" was intended to treat all
       inbound calls as v120. This really just forced the treatment
       of the call as V120 regardless of isdn bearer info. By using
       a command like "force-bearer", this functionality could readily
       be extended to other bearer types in the future.

3) Enabling and disabling functions

       BAD   ppp multilink enable   ppp multilink disable
       GOOD   ppp multilink   no ppp multilink
       The "enable" or "disable" as keywords should be deleted. Instead,
   the command should stand on its own to indicate something being enabled,
   or with a "no" prefix if it is being disabled. Note that it is
   okay to have the "no" form of a command appear in the configuration
   when disabling something that's on by default, e.g. "no ip routing".

       BAD   compress use-stac
       BAD   compress do-stac
       GOOD compress stac
       The configuration should describe the behavior, not command it.

4) Watch for collisions. Since the parser looks for smallest unique
   match, be on the lookout for adding an obscure keyword that
   conflicts with a common one. This is also an argument for going
   deep, not wide with commands as requested in item (2).

5) The fact that a badly designed command in IOS exists does not
   constitute justification for another badly designed command. It
   is a sad fact that we have gruesome hacked commands in a number
                              Page 3

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0851.txt
of areas that need fixing. We try to weed out over time, so the
last thing we need is more entropy.

6) When naming a command, try to pick names that would be familiar
   to people in the industry. For example, "ip mtu 576" is better
   than "ip maximum-transmission-unit 576" since MTU is an accepted
   industry acronym. However, where the industry has not settled on
   a universal parlance, the longest formal name is probably better.

7) Do not use code names in commands. "debug whizzy-asic" or "debug
   walamazoo" will not be very useful to customers. If you need
   them and you SWEAR customers will not use them, make them hidden
   PROVIDED THAT you make sure the debug commands do not collide
   with common debug commands.

8) NEVER use underscores. Use dashes. This is a purely aesthetic
   thing, but it is important to be consistent. Some underscore
   commands have been jammed into the code (b_channel, and others)
   and should be weeded out as soon as possible.

9) Don't hide a command that will be useful for debugging. The way
   to debug robbed bit signalling in AS5200 is so ass-backwards and
   convoluted that I can scream. It requires 3 steps to do, when in
   fact it should be a simple "debug" command. The argument was
   that it was a hack added in for debugging that should never be
   seen/used by customers. In fact, CE uses it tens of times,
   daily. Fundamentally If there is a process that will output
   state information on a real time basis, tracking changes of traffic
   as it occurs, that should be a DEBUG command, using all of the
   debug protocol (eg, buginf()).

10)Commands should tend to be self-explanatory so that a relatively
   knowledgeable user can figure out the command function from the
   command and on-line help without having to scurry off to the
   manuals. What constitutes "self-explanatory" will vary by your
   target audience, so be prepared to defend that point. While
   a non-ATM user may find the command "forward-peak-cell-rate-clp1"
   offensively complex, the point can be made that this will be the
   only acceptable syntax for the ATM community based on the
   vocabulary and culture of that user group.

CHANGING SYNTAX

Changing an existing syntax is usually a bad idea. Once customers
are already using a certain syntax, changing the syntax will frequently
do more harm than good. There are at least four reasons. First,
customers are trained on and familiar with existing syntax. Second,
customers frequently change IOS versions, sometimes jumping up or down
a major revision level. Having portions of the configuration be
unrecognized could cause catastrophic failures. Third, customers
may boot a text file of the config from a server, and may not update that text
version to accommodate new syntax. Similar

catastrophic failures due to
unrecognized commands is possible. And fourth, the fact that some
platforms have a ROM based boot loader that may be several revs down
would cause syntax-changed config files to generate disturbing, though
innocuous, error messages.

For the above reasons, we have many examples of poor syntax
that exist in the IOS which remain there indefinitely. However,
there are instances where egregious misjudgments in command structure
need to be corrected in order to add new functionality to the IOS
Page 4

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```
                              0851.txt
or to reduce the number of calls to the technical assistance center.

The following chart is a guideline on how to execute a syntax change
gracefully, with a minimum of disturbance.  Release "0" is the major
release where the change is implemented.  -1 is the prior major release,
(a major release is defined as  11.2, 11.3, 12.0, 12.1 etc.).

Release     Allow         Visible        Write/NVRAM    Docs
-1          OLD       OLD            OLD            OLD
0           OLD+NEW        OLD+NEW         OLD            OLD+NEW
1           OLD+NEW        NEW             NEW            NEW
2           NEW       NEW            NEW            NEW

This chart is a guideline.  Very serious changes may call for
a longer cycle.  For example, when the command "address" was
changed to "ip address," The old command continued to be
accepted for 3 major releases since very near 100% of all
Cisco customers used the command.
```

From:	Hua Zhong <hzhong@aristanetworks.com>
Sent:	Tuesday, May 08, 2012 11:51 AM
To:	Kenneth Duda
Subject:	Re: NX-OS presentation

Hi Ken,

Do we still want to do this at all? I'd like to get some idea about the overhead involved and whether it's worth it. Maybe we can shorten it to one talk. Based on the Cisco's doc I gave you, there seems to be plenty of stuff we can cover (I do need to track down the origin of the doc). Maybe people like Lincoln Dale can help us on this?

We can discuss this in more detail this afternoon.

Hua

On Tue, May 8, 2012 at 9:42 AM, Kenneth Duda <kduda@aristanetworks.com> wrote:
> Unfortunately, we will not be able to show this presentation. While
> Arista obviously benefits tremendously from your general know-how, It
> would not be right for Arista to make any use of any prior access you
> might have had to any Cisco trade secrets or confidential or
> proprietary information. We cannot and will not do that.
>
> I'm sorry about this. Clearly, we should have had a much more
> specific conversation when you first came up with the idea to do this.
> My bad.
>
>   -Ken
>
> On Tue, May 8, 2012 at 9:31 AM, Prasad Koya <prasad@aristanetworks.com> wrote:
>> Hi Ken,
>>
>> We have few pictures that we took from publicly available Cisco doc
>> on NX-OS. Other than that most of material is compiled by us from our
>> knowledge of NX-OS. Not sure if the latter would fall under
>> Cisco-confidential category.
>>
>> thanks
>> Prasad
>>

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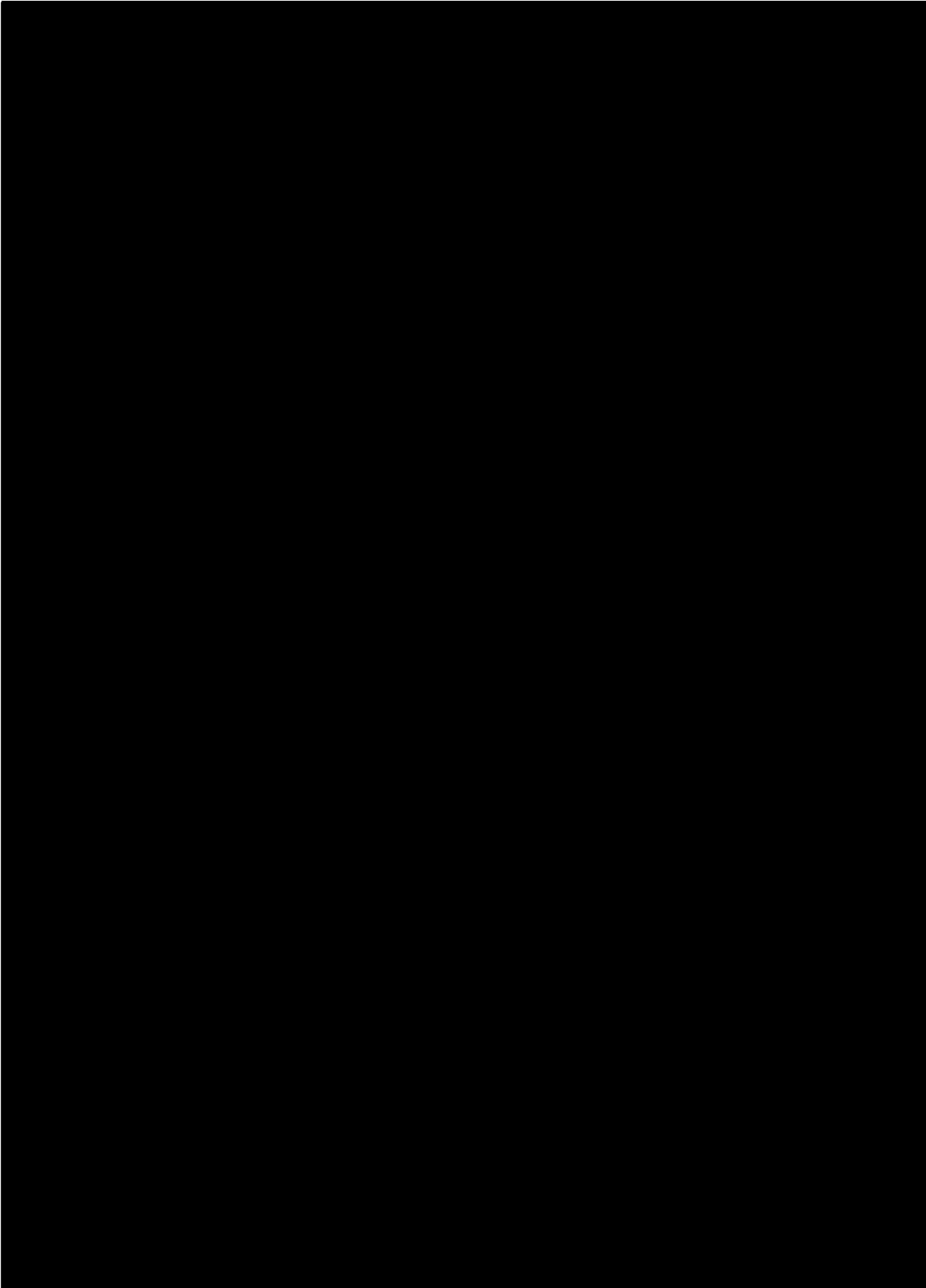
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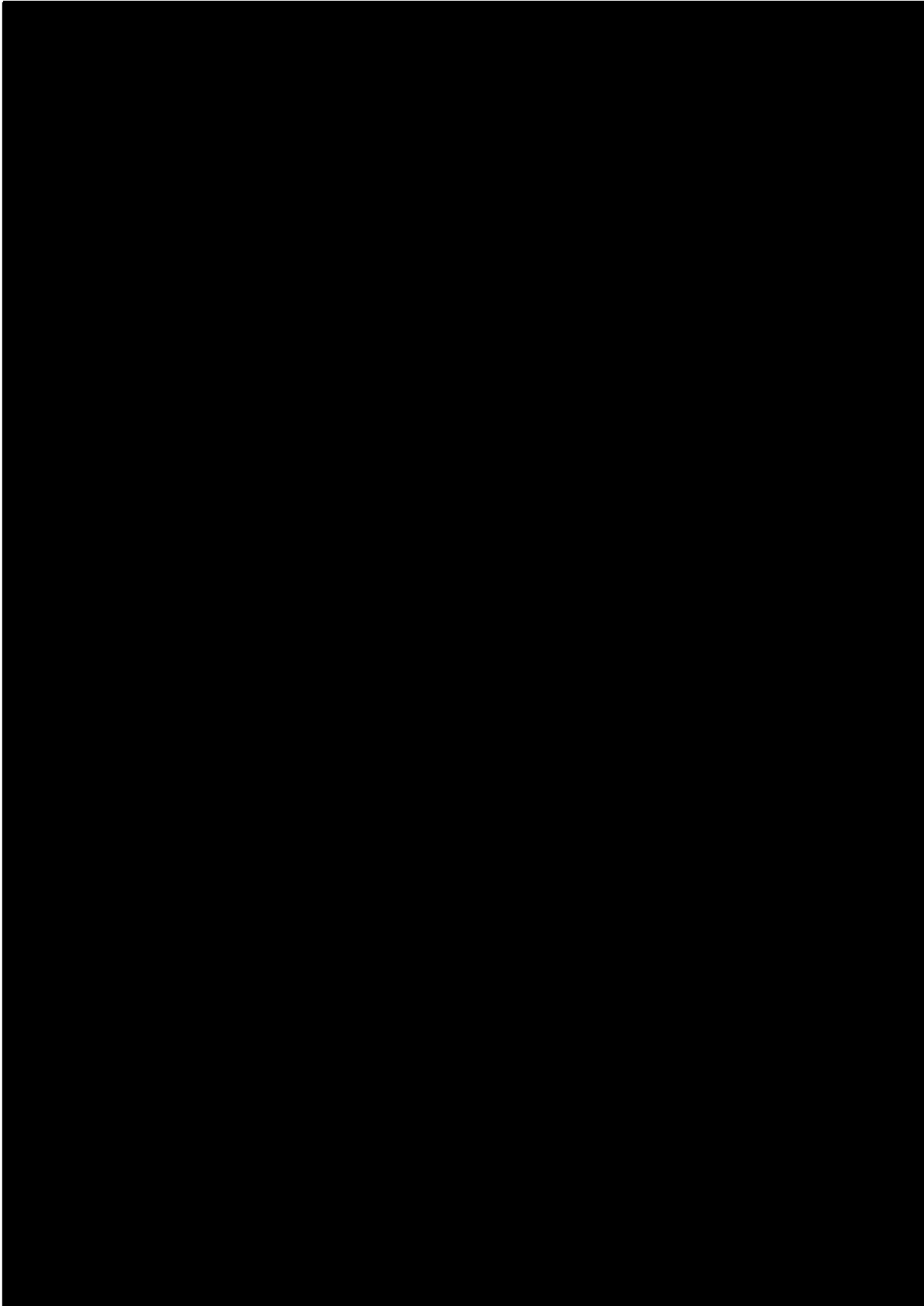
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for so long. Our top five differentiators are all tied to our software.

The first is that we build, without using any proprietary components, active/active networks that can scale to 50,000 and 100,000 nodes. Other companies try to do that with proprietary technologies. You may be aware of Juniper's QFabric or Cisco's FabricPath and OTV [Overlay Transport Virtualization]. We are able to do it in a standards based fashion, and every one of our networks interoperates with Cisco routers, Juniper switches, NetScreen firewalls, you name it.

The second is, because of the software, we were able to bring to the data center and cloud what we call self-healing resilience. Usually, redundancy and resilience means buy two of everything and connect them in case one fails. It's great for the vendor to get two of everything. But we were able to do it right in our software. Today, you look at software agents and how they interact. If you have a memory leak in software today, and the agents talk to each other in a traditional network operating system, they do so with something called IPC, inter-process communication. But think of the cloud where you have, like we described, 100,000 of these, the multiplier effect of failure is huge with this inter-process communication. Arista chose a publish/subscribe model using a built-in SYSDB database, where the state of every software agent is stored. Because that's not human-generated, it's the most resilient piece of code. Let's say you have a failure. We automatically track the failure and contain it. Then we repair it. We actually spin up a new agent. Today's enterprise agent manager has no maintenance windows. So they don't have to know.

The third [differentiator] is that we are open and programmable. You hear a lot of talk about SDN these days, and one has to separate the hype from the reality. The essence of SDN to me is, first of all, build open interfaces and allow your customers to write to their applications through our APIs at the northbound level. and at the southbound level our devices must be programmable. We didn't call it SDN back when we developed this, we called it EOS. The extensible in EOS is [in reference to the operating system being] very programmable. Every aspect of our software, whether it's at the hardware plane, at the device plane or the software plane, can be programmed. That's a huge advantage. We find ourselves in a fortunate position that as the SDN market is evolving, our network is already open and programmable and SDN-ready.

The fourth one is big data analysis. Data analysis and traffic visibility is becoming a real weakness, because, as you know, we can all talk about improving price, performance and CAPEX, but the biggest cost center in networks is OPEX. There are three ways to solve OPEX issues: Stop buying gear, outsource your gear or make your technology do better work. We believe technology to solve the problem is far better than outsourcing or throwing people at the

problem. We call this "from A to Z analysis." We can do automation, we can do zero-touch provisioning, we can do a suite of functions here because data is coming at such amazing speeds, structured and unstructured. how do you sort out what's relevant and how do you monitor, how do you tap, how do you do real-time captures at 10 gigabits and terabits when the data is moving so fast? We're not just building enterprise features. Cisco's done that really well for the last two decades, that's their market. But yet if you look at the way servers are sold today, only half of them are going into an enterprise application. The other half, which are high-performance computing and Web, are going into the cloud applications. They don't require traditional enterprise features. Just like mainframes moved to client server, enterprises are moving to more HPC and Web, and those features are much more about reducing OPEX and improving the orchestration and traffic visibility and data analysis.

The fifth and final differentiator is network visualization. What VMware did to servers with server virtualization, we believe jointly working with VMware we can do with network virtualization. VM sprawl has created network sprawl. Arista and VMware, together with a number of other vendors, Broadcom, Cisco, etc., defined to me what is one of the most breakthrough specifications in our industry — VXLAN, virtual extended LAN. The VLAN, as a unit, is something we all grew up with and invented back in the '90s. It's been with us 25 years, way too long. VLAN boundaries have plagued the deployment of virtualization because you're limited to 6,000 VLANs or 16,000 VLANs, and you've got many more virtual machines. So therefore, you've had a vi-admin manage one, the virtual network, and the command line interface or Cisco admin manage the physical network. These two worlds need to come together. Arista, working particularly closely with VMware, has been able to bridge that gap between network physical and network virtual, using VXLAN. VXLAN all of a sudden opens up the boundary from 16,000 to 16 million possible entries. So we're very excited with the technology we demonstrated at [the VMworld conference].

Is it deployed now in the market?

Very early. We are one of the first to come out with it. We showed it August 2012, and we showed interoperability with VMware, EMC and F5. We shipped a product based on it, the Arista 7150, in November.

Say I'm a big Cisco installation today. When would I talk to Arista? What's the need that opens the door?

It could be project-based or it could be a strategy. When it's project-based, it's usually that you're deploying high-frequency trading or you need a high-performance compute solution, usually InfiniBand and Ethernet get reviewed. Sometimes InfiniBand gets chosen because the supercomput-

er guys really like it and other times it's high-density 10GB. Another application is big data. Storage is no longer just a fibre-channel SAN — you will start needing 10GB storage for iSCSI or more and more Hadoop clusters with direct-attached storage. That becomes another very interesting Arista project. Virtualization, the VM sprawl. Another one we're starting to see more of is huge media rendering, and video applications that are pushing the envelope of bandwidth. Where the application intersects the network is the common theme through all the projects.

On the other hand, Arista has to walk before it runs. We've been growing at the rate of one new customer a day since we started shipping. We now have 1,700 customers. Deployments usually start small, then they get really fascinated and intrigued and appreciative of EOS, and all of its operational advantages, how open it is, how easy it is to use. The training is very easy and a Cisco CCIE expert would be able to use Arista right away, because we have similar command-line interfaces and operational look and feel. ~~Where we don't have to invent, we don't.~~ Where we had to invent for these specific use cases we do, so most often it's a use case or a project. Sometimes it's a data center build-up. After they use us in one project, they'll say they want to consolidate data centers. I would say 10% to 20% of them are now standardizing on Arista as their data center strategy.

You mentioned about 1,700 customers. Give me a sense of your business progress to date.

We're not supposed to [talk revenue] but the company is very young, it's only 5 years old. We've gone from 30 employees when we started to more than 500. I guess the biggest thing I'd leave you with is that in the beginning we were a market leader for financials and high-frequency trading which, as you know, is a tough customer. We've always had to go into mission-critical [environments] and we didn't have it easy ever. It wasn't like we were in a little lab somewhere. We believe we are today 70% to 80% market leaders in high-frequency trading. In 2008, 2009 and even part of 2010, that was 70% of our business. Today it's diversified nicely into three areas. The first is financials. The second is what I call Web 2.0, and the massive scale of their deployments, the cloud scale, really. The third is cloud and service providers. Every service provider is looking to be a cloud vendor. In all of these three cases we are being looked at as the innovative alternative to traditional legacy players.

You were at Cisco for a long time.

Yeah, 15 years. I intended to be there two years. But I was there 15 years, two years at a time.

So how did your experience at Cisco shape this?

I had a big hand in shaping Cisco's enterprise switching strategy, and it helped me
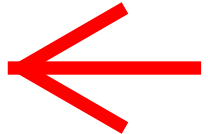
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Marybeth Peters

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1

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PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared.   **Title of Collective Work ▼**

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2

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Cisco Systems, Inc.

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Was this contribution to the work a "work made for hire"? ☑ Yes ☐ No

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1995 ◀ Year

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Cisco Technology, Inc.
170 West Tasman Drive
San Jose, CA 95134

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b. ☐ This is the first application submitted by this author as copyright claimant.

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Prior works by claimant and preexisting third party computer code

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7

CORRESPONDENCE Give name and address to which correspondence about this application should be sent.   Name/Address/Apt/City/State/ZIP ▼
Tu T. Tsao, Esq.
Fenwick & West LLP
2 Palo Alto Square
Palo Alto, CA 94306

b

Area code and daytime telephone number ▶ (650) 858-7696   Fax number ▶   (650) 494-1417

Email ▶ ttsao@fenwick.com

CERTIFICATION* I, the undersigned, hereby certify that I am the

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of the work identified in this application and that the statements made
by me in this application are correct to the best of my knowledge.

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Robert A. Barr, Worldwide Patent Counsel   Date ▶

Handwritten signature (X) ▼

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CONTINUATION SHEET
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F **TXu 1-036-057**

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Page __3__ of __4__ pages

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- If you submit this Continuation Sheet, clip (do not tape or staple) it to the basic form and fold the two together before submitting them.
- Space A of this sheet is intended to identify the basic application. Space B is not applicable to Short forms.
  Space B is a continuation of Space 2 on the basic application. Space B is not applicable to Short forms.
  Space C (on the reverse side of this sheet) is for the continuation of Spaces 1, 4, or 6 on the basic application or for the continuation of Space 1 on any of the three Short Forms PA, TX, or VA.

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Cisco IOS 11.0

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B

Continuation of Space 2

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OR { Citizen of ▶ _____
{ Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

f

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
{ Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

Use the reverse side of this sheet if you need more space for continuation of Spaces 1, 4, or 6 of the basic form or for the

Appx50947

CONTINUATION OF (Check which):   ☐ Space 1   ☐ Space 4   ☐ Space 6   ☑ Space 2b

C Continuation of other Spaces

Name of Author	Work for Hire	Domicile	Anonymous	Pseudo-nymous	Nature of Contribution
ABE Staffing, Inc.	Yes	United States	Yes	No	Computer code
Metaplex, Inc.	Yes	United States	Yes	No	Computer code
Nano Solutions	Yes	United States	Yes	No	Documentation
Bev Talbott	No	United States	Yes	No	Documentation

D

Certificate will be mailed in window envelope to this address:

Name ▼
Susanne S. Morales, Paralegal / Fenwick & West LLP

Number/Street/Apt ▼
2 Palo Alto Square

City/State/ZIP ▼
Palo Alto, CA 94306

CERTIFICATE OF REGISTRATION

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

REGISTER OF COPYRIGHTS
United States of America

OFFICIAL SEAL

FORM TX

For a Nondramatic Literary Work
UNITED STATES COPYRIGHT OFFICE

TX 5-531-435

TX0005531435

(TX /   IAU
EFFECTIVE DATE OF REGISTRATION

JUN 14 2002

Month   Day   Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

1

TITLE OF THIS WORK ▼
Cisco IOS 11.1

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS Release 11.1; Cisco IOS Version 11.1; Cisco Internetwork Operating System 11.1; Cisco Internetwork Operating System Release 11.1; Cisco Internetwork Operating System Version 11.1

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared.   Title of Collective Work ▼

If published in a periodical or serial give: Volume ▼   Number ▼   Issue Date ▼   On Pages ▼

2

a NAME OF AUTHOR ▼
Cisco Systems, Inc.

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?
☑ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶_____
{ Domiciled in▶ United States

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☑ No
Pseudonymous? ☐ Yes ☑ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼
New and revised computer code

NOTE

Under the law, the "author" of a "work made for hire" is generally the employer, not the employee (see instructions). For any part of this work that was "made for hire" check "Yes" in the space provided, give the employer (or other person for whom the work was prepared) as "Author" of that part, and leave the space for dates of birth and death blank.

b NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶_____
{ Domiciled in▶_____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

c NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶_____
{ Domiciled in▶_____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

3

a YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED This information must be given in all cases.
1996

b DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK Complete this information ONLY if this work has been published.
Month ▶ February   Day ▶ 28   Year ▶ 1996
United States   ◀ Nation

4

COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2. ▼
Cisco Technology, Inc.
170 West Tasman Drive
San Jose, CA 95134

See instructions before completing this space.

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2, give a brief statement of how the claimant(s) obtained ownership of the copyright. ▼
By agreement

APPLICATION RECEIVED
JUN 14 2002 *July 16, 2002*
ONE DEPOSIT RECEIVED
JUN 14 2002
TWO DEPOSITS RECEIVED

FUNDS RECEIVED

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OFFICE USE ONLY

MORE ON BACK ▶ • Complete all applicable spaces (numbers 5-9) on the reverse side of this page.
• See detailed instructions.   • Sign the form at line 8.

DO NOT WRITE HERE
Page 1 of __4__ pages

EXAMINED BY _TMS_

CHECKED BY

☐ CORRESPONDENCE
Yes

FORM TX

FOR
COPYRIGHT
OFFICE
USE
ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

5 PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office?
☑ Yes ☐ No If your answer is "Yes," why is another registration being sought? (Check appropriate box.) ▼
a. ☐ This is the first published edition of a work previously registered in unpublished form.
b. ☐ This is the first application submitted by this author as copyright claimant.
c. ☐ This is a changed version of the work, as shown by space 6 on this application.
If your answer is "Yes," give: Previous Registration Number ▶ Pending   Year of Registration ▶ 2002

6 DERIVATIVE WORK OR COMPILATION
Preexisting Material Identify any preexisting work or works that this work is based on or incorporates. ▼
Prior works by claimant and preexisting third party computer code   **a**

Material Added to This Work Give a brief, general statement of the material that has been added to this work and in which copyright is claimed. ▼
New and revised computer code   **b**

See instructions before completing this space.

7 DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.
Name ▼   Account Number ▼   **a**

CORRESPONDENCE Give name and address to which correspondence about this application should be sent. Name/Address/Apt/City/State/ZIP ▼   **b**
Tu T. Tsao, Esq.
Fenwick & West LLP
2 Palo Alto Square
Palo Alto, CA 94306
Area code and daytime telephone number ▶ (650) 858-7696   Fax number ▶ (650) 494-1417
Email ▶ ttsao@fenwick.com

8 CERTIFICATION* I, the undersigned, hereby certify that I am the
Check only one ▶
☐ author
☐ other copyright claimant
☐ owner of exclusive right(s)
☑ authorized agent of _Cisco Technology, Inc._
Name of author or other copyright claimant, or owner of exclusive right(s) ▲

of the work identified in this application and that the statements made
by me in this application are correct to the best of my knowledge.

Typed or printed name and date ▼ If this application gives a date of publication in space 3, do not sign and submit it before that date.
Robert A. Barr, Worldwide Patent Counsel   Date ▶

Handwritten signature (X) ▼
X _____

9 Certificate will be mailed in window envelope to this address:
Name ▼
Susanne S. Morales, Paralegal / Fenwick & West LLP
Number/Street/Apt ▼
2 Palo Alto Square
City/State/ZIP ▼
Palo Alto, CA 94306

YOU MUST:
• Complete all necessary spaces
• Sign your application in space 8
SEND ALL 3 ELEMENTS IN THE SAME PACKAGE:
1. Application form
2. Nonrefundable filing fee in check or money order payable to Register of Copyrights
3. Deposit material
MAIL TO
Library of Congress
Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000

As of July 1, 1999, the filing fee for Form TX is $30.

*17 U.S.C. § 506(e): Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 409, or in any written statement filed in connection with the application, shall be fined not more than $2,500.
June 1999—200,000
WEB REV: June 1999   ⊕ Printed on recycled paper   ☆U.S. GOVERNMENT PRINTING OFFICE: 1999-454-879/49

Appx50950

CONTINUATION SHEET
FOR APPLICATION FORMS

ⓔFORM ___ TX ___ /CON

UNITED STATES COPYRIGHT OFFICE

R   TX 5-531-435

TX0005531435

PA	PAU	SE	SEG	SEU	SR	SRU	TX	TXU	VA	VAU

EFFECTIVE DATE OF REGISTRATION

JUN 1 4 2002

(Month)	(Day)	(Year)

CONTINUATION SHEET RECEIVED

JUN 1 4 2002

Page ___3___ of ___4___ pages

- This Continuation Sheet is used in conjunction with Forms CA, PA, SE, SR, TX, and VA, only. Indicate which basic form you are continuing in the space in the upper right-hand corner.
- If at all possible, try to fit the Information called for into the spaces provided on the basic form.
- If you do not have enough space for all the information you need to give on the basic form, use this Continuation Sheet and submit it with the basic form.
- If you submit this Continuation Sheet, clip (do not tape or staple) it to the basic form and fold the two together before submitting them.
- Space A of this sheet is intended to identify the basic application.
  Space B is a continuation of Space 2 on the basic application. Space B is not applicable to Short forms.
  Space C (on the reverse side of this sheet) is for the continuation of Spaces 1, 4, or 6 on the basic application or for the continuation of Space 1 on any of the three Short Forms PA, TX, or VA.

DO NOT WRITE ABOVE THIS LINE. FOR COPYRIGHT OFFICE USE ONLY

A
Identification of Application

IDENTIFICATION OF CONTINUATION SHEET: This sheet is a continuation of the application for copyright registration on the basic form submitted for the following work:

- TITLE: (Give the title as given under the heading "Title of this Work" in Space 1 of the basic form.)

  Cisco IOS 11.1

- NAME(S) AND ADDRESS(ES) OF COPYRIGHT CLAIMANT(S): (Give the name and address of at least one copyright claimant as given in Space 4 of the basic form or Space 2 of any of the Short Forms PA, TX, or VA.)

  Cisco Technology, Inc., 170 West Tasman Drive, San Jose, CA 95134

B
Continuation of Space 2

d

NAME OF AUTHOR ▼

(See Space C)

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
{ Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

e

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
{ Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

f

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
{ Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

Use the reverse side of this sheet if you need more space for continuation of Spaces 1, 4, or 6 of the basic form or for the continuation of Space 1 on any of the Short Forms PA, TX, or VA.

Appx50951

CONTINUATION OF (Check which): ☐ Space 1   ☐ Space 4   ☐ Space 6   ☑ Space 2b

C

Continuation of other Spaces

Name of Author	Work for Hire	Domicile	Anonymous	Pseudo-nymous	Nature of Contribution
Energetic Systems	Yes	United States	Yes	No	Computer code
Metaplex, Inc.	Yes	United States	Yes	No	Computer code
Nano Solutions	Yes	United States	Yes	No	Documentation
Bev Talbott	No	United States	Yes	No	Documentation

Certificate will be mailed in window envelope to this address:	Name ▼ Susanne S. Morales, Paralegal / Fenwick & West LLP Number/Street/Apt ▼ 2 Palo Alto Square City/State/ZIP ▼ Palo Alto, CA 94306	**YOU MUST:** • Complete all necessary spaces • Sign your application **SEND ALL 3 ELEMENTS IN THE SAME PACKAGE:** 1. Application form 2. Nonrefundable fee in check or money order payable to *Register of Copyrights* 3. Deposit Material **MAIL TO:** Library of Congress, Copyright Office 101 Independence Avenue, S.E. Washington, D.C. 20559-6000

D

Fees are effective through June 30, 2002. After that date, check the Copyright office Website at www.loc.gov/copyright or call (202) 707-3000 for current fee information.

Appx50952

CERTIFICATE OF REGISTRATION

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

REGISTER OF COPYRIGHTS
United States of America

OFFICIAL SEAL

FORM CA

For Supplementary Registration
UNITED STATES COPYRIGHT OFFICE

REGISTRATION NUMBER

TXu 1-048-569

EFFECTIVE DATE OF SUPPLEMENTARY REGISTRATION

Aug.   *20,*   *2002*
Month   Day   Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

A

Title of Work ▼
    Cisco IOS 11.1

Registration Number of the Basic Registration ▼
TX 5-531-435

Year of Basic Registration ▼
2002

Name(s) of Author(s) ▼
Cisco Systems, Inc.

Name(s) of Copyright Claimant(s) ▼
Cisco Technology, Inc.

B

Location and Nature of Incorrect Information in Basic Registration ▼

Line Number __3b__   Line Heading or Description __Date and Nation of First Publication of this Particular Work__

Incorrect Information as It Appears in Basic Registration ▼

February 28, 1996; United States

Corrected Information ▼

N/A (please delete)

Explanation of Correction ▼

The work is unpublished.

C

Location and Nature of Information in Basic Registration to be Amplified ▼

Line Number _____   Line Heading or Description _____

Amplified Information and Explanation of Information ▼

MORE ON BACK ▶   • Complete all applicable spaces (D-G) on the reverse side of this page.   DO NOT WRITE HERE
     • See detailed instructions.   • Sign the form at Space F.   Page 1 of _____ pages

Appx50953

FORM CA RECEIVED

AUG. 2 0. 2002

FUNDS RECEIVED DATE

AUG. 2 0. 2002

EXAMINED BY _TMS_

CORRESPONDENCE ☐

REFERENCE TO THIS REGISTRATION ADDED TO
BASIC REGISTRATION   ☑ YES   ☐ NO

FORM CA

FOR
COPYRIGHT
OFFICE
USE
ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

Continuation of: ☑ Part B _or_ ☐ Part C

Line Number: 5   Line Heading or Description: Previous Registration

Incorrect Information as It Appears in Basic Registration: Box C unchecked

Corrected Information: Box C checked

Explanation of Correction: This work is a changed version.

Line Number: 2b   Line Heading or Description: Name of Author

Incorrect Information as It Appears in Basic Registration: No entry

Corrected Information: See Attached Form TX/CON for Additional Authors

Explanation of Correction: Additional authors on Form TX/CON

Correspondence: Give name and address to which correspondence about this application should be sent.

Tu T. Tsao, Esq.
Fenwick & West LLP
2 Palo Alto Square
Palo Alto, CA 94306

Phone (650) 858-7696 _____   Fax (650) 494-1417 _____   Email ttsao@fenwick.com _____

Deposit Account: If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.

Name _____

Account Number _____

Certification* I, the undersigned, hereby certify that I am the: (Check only one)
☐ author   ☐ owner of exclusive right(s)
☐ other copyright claimant   ☑ duly authorized agent of _Cisco Technology, Inc._
                             Name of author or other copyright claimant, or owner of exclusive right(s) ▲

of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

Typed or printed name ▼ Tu T. Tsao   Date ▼ 8/19/15

Handwritten signature (X) ▼
Tu Tsao

Certificate
will be
mailed in
window
envelope
to this
address:

Name ▼
Susanne S. Morales, Paralegal / Fenwick & West LLP

Number/Street/Apt ▼
2 Palo Alto Square

City/State/ZIP ▼
Palo Alto, CA 94306

YOU MUST
• Complete all necessary spaces
• Sign your application in Space F

SEND ALL ELEMENTS
IN THE SAME PACKAGE
1. Application form
2. Nonrefundable filing fee in check or
   money order payable to Register of
   Copyrights

MAIL TO
Library of Congress
Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000

*17 U.S.C. § 506(e): Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 409, or in any written statement filed in connection
with the application, shall be fined not more than $2,500.

Rev. June 2002—20,000   Web Rev: June 2002   ♻ Printed on recycled paper   U.S. Government Printing Office: 2000-461-113/20,021

Appx50954

CERTIFICATE OF REGISTRATION

FORM TX
For a Nondramatic Literary Work
UNITED STATES COPYRIGHT OFFICE

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below.The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

REGISTER OF COPYRIGHTS
United States of America

OFFICIAL SEAL

TXu 1-036-063

•TXu001036063•

EFFECTIVE DATE OF REGISTRATION

JUN 1 4 2002

Month   Day   Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

1

TITLE OF THIS WORK ▼
Cisco IOS 11.2

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS Release 11.2; Cisco IOS Version 11.2; Cisco Internetwork Operating System 11.2; Cisco Internetwork Operating System Release 11.2; Cisco Internetwork Operating System Version 11.2

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared.   **Title of Collective Work ▼**

If published in a periodical or serial give: **Volume ▼**   **Number ▼**   **Issue Date ▼**   **On Pages ▼**

2

a **NAME OF AUTHOR ▼**
Cisco Systems, Inc.

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?
☑ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE Name of Country
OR { Citizen of ▶
Domiciled in ▶ **United States**

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☑ No
Pseudonymous?   ☐ Yes ☑ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼
New and revised computer code and accompanying documentation

NOTE
Under the law, the "author" of a "work made for hire" is generally the employer, not the employee (see instructions). For any part of this work that was "made for hire" check "Yes" in the space provided, give the employer (or other person for whom the work was prepared) as "Author" of that part, and leave the space for dates of birth and death blank.

b **NAME OF AUTHOR ▼**
See Attached Form TX/CON for Additional Authors

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE Name of Country
OR { Citizen of ▶
Domiciled in ▶

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous?   ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

c **NAME OF AUTHOR ▼**

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE Name of Country
OR { Citizen of ▶
Domiciled in ▶

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous?   ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

3

a **YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED** This information must be given Year in all cases.
1996

b **DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK**
Complete this information ONLY if this work has been published.
Month ▶   Day ▶   Year ▶   ◀ Nation

4

COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2. ▼
Cisco Technology, Inc.
170 West Tasman Drive
San Jose, CA 95134

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2, give a brief statement of how the claimant(s) obtained ownership of the copyright. ▼
By agreement

APPLICATION RECEIVED
JUN 14. 2002
ONE DEPOSIT RECEIVED
JUN 14. 2002
TWO DEPOSITS RECEIVED

FUNDS RECEIVED

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MORE ON BACK ▶ • Complete all applicable spaces (numbers 5-9) on the reverse side of this page.
• See detailed instructions.   • Sign the form at line 8.

DO NOT WRITE HERE
Page 1 of 4 pages

Appx50955

| EXAMINED BY _TMS_ | FORM TX |
| CHECKED BY | |

□ CORRESPONDENCE
□ Yes

FOR
COPYRIGHT
OFFICE
USE
ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

5

PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office?

☑ Yes □ No If your answer is "Yes," why is another registration being sought? (Check appropriate box.) ▼

a. □ This is the first published edition of a work previously registered in unpublished form.

b. □ This is the first application submitted by this author as copyright claimant.

c. ☑ This is a changed version of the work, as shown by space 6 on this application.

If your answer is "Yes," give: Previous Registration Number ▶ Pending   Year of Registration ▶ 2002

6
a

DERIVATIVE WORK OR COMPILATION
Preexisting Material Identify any preexisting work or works that this work is based on or incorporates. ▼

Prior works by claimant and preexisting third party computer code

b

See instructions
before completing
this space.

Material Added to This Work Give a brief, general statement of the material that has been added to this work and in which copyright is claimed. ▼
New and revised computer code and accompanying documentation

7
a

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.
Name ▼   Account Number ▼

b

CORRESPONDENCE Give name and address to which correspondence about this application should be sent.   Name/Address/Apt/City/State/ZIP ▼
Tu T. Tsao, Esq.
Fenwick & West LLP
2 Palo Alto Square
Palo Alto, CA 94306

Area code and daytime telephone number ▶ (650) 858-7696   Fax number ▶ (650) 494-1417

Email ▶ ttsao@fenwick.com

8

CERTIFICATION* I, the undersigned, hereby certify that I am the

Check only one ▶
□ author
□ other copyright claimant
□ owner of exclusive right(s)
☑ authorized agent of **Cisco Technology, Inc.**

of the work identified in this application and that the statements made
by me in this application are correct to the best of my knowledge.

Name of author or other copyright claimant, or owner of exclusive right(s) ▲

Typed or printed name and date ▼ If this application gives a date of publication in space 3, do not sign and submit it before that date.

Robert A. Barr, Worldwide Patent Counsel   Date ▶

Handwritten signature (X) ▼

X _____

9

Certificate
will be
mailed in
window
envelope
to this
address:

Name ▼
Susanne S. Morales, Paralegal / Fenwick & West LLP

Number/Street/Apt ▼
2 Palo Alto Square

City/State/ZIP ▼
Palo Alto, CA 94306

YOU MUST:
• Complete all necessary spaces
• Sign your application in space 8
SEND ALL 3 ELEMENTS
IN THE SAME PACKAGE:
1. Application form
2. Nonrefundable filing fee in check or money order
   payable to Register of Copyrights
3. Deposit material
MAIL TO:
Library of Congress
Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000

As of
July 1,
1999,
the
filing
fee for
Form TX
is $30.

*17 U.S.C. § 506(e): Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 409, or in any written statement filed in connection
with the application, shall be fined not more than $2,500.
June 1999—200,000
WEB REV: June 1999
☯ PRINTED ON RECYCLED PAPER   ☆U.S. GOVERNMENT PRINTING OFFICE: 1999-454-879/49

Appx50956

CONTINUATION SHEET
FOR APPLICATION FORMS

- This Continuation Sheet is used in conjunction with Forms CA, PA, SE, SR, TX, and VA, only. Indicate which basic form you are continuing in the space in the upper right-hand corner.
- If at all possible, try to fit the information called for into the spaces provided on the basic form.
- If you do not have enough space for all the information you need to give on the basic form, use this Continuation Sheet and submit it with the basic form.
- If you submit this Continuation Sheet, clip (do not tape or staple) it to the basic form and fold the two together before submitting them.
- Space A of this sheet is intended to identify the basic application.
  Space B is a continuation of Space 2 on the basic application. Space B is not applicable to Short forms.
  Space C (on the reverse side of this sheet) is for the continuation of Spaces 1, 4, or 6 on the basic application or for the continuation of Space 1 on any of the three Short Forms PA, TX, or VA.

Ⓔ **FORM ___TX___ /CON**
UNITED STATES COPYRIGHT OFFICE

TXu 1-036-063

PA	PAU	SE	SEG	SEU	SR	SRU	TX	TXU	VA	VAU

EFFECTIVE DATE OF REGISTRATION

JUN 1 4 2002

(Month)   (Day)   (Year)

CONTINUATION SHEET RECEIVED

JUN 1 4 2002

Page _3_ of _4_ pages

DO NOT WRITE ABOVE THIS LINE. FOR COPYRIGHT OFFICE USE ONLY

A
Identification of Application

IDENTIFICATION OF CONTINUATION SHEET: This sheet is a continuation of the application for copyright registration on the basic form submitted for the following work:
- TITLE: (Give the title as given under the heading "Title of this Work" in Space 1 of the basic form.)

  Cisco IOS 11.2

- NAME(S) AND ADDRESS(ES) OF COPYRIGHT CLAIMANT(S) : (Give the name and address of at least one copyright claimant as given in Space 4 of the basic form or Space 2 of any of the Short Forms PA, TX, or VA.)

  Cisco Technology, Inc., 170 West Tasman Drive, San Jose, CA 95134

B
Continuation of Space 2

d

NAME OF AUTHOR ▼
(See Space C)

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
    { Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

e

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
    { Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

f

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
    { Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

Use the reverse side of this sheet if you need more space for continuation of Spaces 1, 4, or 6 of the basic form or for the

Appx50957

CONTINUATION OF (Check which):   ☐ Space 1   ☐ Space 4   ☐ Space 6   ☑ Space 2b

C

Continuation of other Spaces

Name of Author	Work for Hire	Domicile	Anonymous	Pseudo-nymous	Nature of Contribution
ABE Staffing Services, Inc.	Yes	United States	Yes	No	Computer code
HCL America, Inc.	Yes	United States	Yes	No	Computer code
HCL Consulting Limited	Yes	India	Yes	No	Computer code
Network Aware, Inc.	Yes	United States	Yes	No	Computer code
Metaplex, Inc.	Yes	United States	Yes	No	Computer code
Nano Solutions	Yes	United States	Yes	No	Documentation
NSA	Yes	United States	Yes	No	Documentation
Oakhill Publications/ Computer Education Consulting	Yes	United States	Yes	No	Documentation
Rick Barron	No	United States	Yes	No	Documentation
Bev Talbott	No	United States	Yes	No	Documentation

D

Certificate will be mailed in window envelope to this address:

Name ▼
Susanne S. Morales, Paralegal / Fenwick & West LLP

Number/Street/Apt ▼
2 Palo Alto Square

City/State/ZIP ▼
Palo Alto, CA 94306

CERTIFICATE OF REGISTRATION

FORM TX
For a Nondramatic Literary Work
UNITED STATES COPYRIGHT OFFICE

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

REGISTER OF COPYRIGHTS
United States of America

OFFICIAL SEAL

TXu 1-036-062

EFFECTIVE DATE OF REGISTRATION

JUN 1 4 2002

| Month | Day | Year |

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

1

TITLE OF THIS WORK ▼
Cisco IOS 11.3

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS Release 11.3; Cisco IOS Version 11.3; Cisco Internetwork Operating System 11.3; Cisco Internetwork Operating System Release 11.3; Cisco Internetwork Operating System Version 11.3

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared.   Title of Collective Work ▼

If published in a periodical or serial give: Volume ▼   Number ▼   Issue Date ▼   On Pages ▼

2

a   NAME OF AUTHOR ▼
Cisco Systems, Inc.

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?
☑ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
    Domiciled in ▶ United States

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☑ No
Pseudonymous?   ☐ Yes ☑ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼
New and revised computer code and accompanying documentation

NOTE
Under the law, the "author" of a "work made for hire" is generally the employer, not the employee (see instructions). For any part of this work that was "made for hire" check "Yes" in the space provided, give the employer (or other person for whom the work was prepared) as "Author" of that part, and leave the space for dates of birth and death blank.

b   NAME OF AUTHOR ▼
See Attached Form TX/CON for Additional Authors

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
    Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous?   ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

c   NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
    Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous?   ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

3

a   YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED   This information must be given in all cases.   1997 ◀ Year

b   DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK   Complete this information ONLY if this work has been published.   Month ▶ _____ Day ▶ _____ Year ▶ _____ ◀ Nation

4

COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2. ▼
Cisco Technology, Inc.
170 West Tasman Drive
San Jose, CA 95134

See instructions before completing this space.

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2, give a brief statement of how the claimant(s) obtained ownership of the copyright. ▼

By agreement

APPLICATION RECEIVED
JUN 14. 2002
ONE DEPOSIT RECEIVED
JUN 14. 2002
TWO DEPOSITS RECEIVED
FUNDS RECEIVED

DO NOT WRITE HERE OFFICE USE ONLY

MORE ON BACK ▶   • Complete all applicable spaces (numbers 5-9) on the reverse side of this page.
• See detailed instructions.   • Sign the form at line 8.

DO NOT WRITE HERE
Page 1 of __4__ pages

Appx50959

EXAMINED BY _TM S_

CHECKED BY

☐ CORRESPONDENCE
   Yes

FORM TX

FOR
COPYRIGHT
OFFICE
USE
ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

5

PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office?

☑ Yes ☐ No If your answer is "Yes," why is another registration being sought? (Check appropriate box.) ▼

a. ☐ This is the first published edition of a work previously registered in unpublished form.

b. ☐ This is the first application submitted by this author as copyright claimant.

c. ☑ This is a changed version of the work, as shown by space 6 on this application.

If your answer is "Yes," give: Previous Registration Number ▶   **Pending**   Year of Registration ▶   2002

6 **a**

DERIVATIVE WORK OR COMPILATION

Preexisting Material Identify any preexisting work or works that this work is based on or incorporates. ▼

Prior works by claimant and preexisting third party computer code

See instructions
before completing
this space.

b

Material Added to This Work Give a brief, general statement of the material that has been added to this work and in which copyright is claimed. ▼

New and revised computer code and accompanying documentation

7 **a**

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.

Name ▼   Account Number ▼

b

CORRESPONDENCE Give name and address to which correspondence about this application should be sent. Name/Address/Apt/City/State/ZIP ▼

Tu T. Tsao, Esq.
Fenwick & West LLP
2 Palo Alto Square
Palo Alto, CA 94306

Area code and daytime telephone number ▶ **(650) 858-7696**   Fax number ▶ **(650) 494-1417**

Email ▶ ttsao@fenwick.com

8

CERTIFICATION* I, the undersigned, hereby certify that I am the

Check only one ▶

☐ author
☐ other copyright claimant
☐ owner of exclusive right(s)
☑ authorized agent of **Cisco Technology, Inc.**

of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

Name of author or other copyright claimant, or owner of exclusive right(s) ▲

Typed or printed name and date ▼ If this application gives a date of publication in space 3, do not sign and submit it before that date.

Robert A. Barr, Worldwide Patent Counsel   Date ▶

Handwritten signature (X) ▼

X _____

9

Certificate will be mailed in window envelope to this address:	
Name ▼ Susanne S. Morales, Paralegal / Fenwick & West LLP	
Number/Street/Apt ▼ 2 Palo Alto Square	
City/State/ZIP ▼ Palo Alto, CA 94306	

YOU MUST:
• Complete all necessary spaces
• Sign your application in space 8

SEND ALL 3 ELEMENTS IN THE SAME PACKAGE

1. Application form
2. Nonrefundable filing fee in check or money order payable to *Register of Copyrights*
3. Deposit material

MAIL TO:
Library of Congress
Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000

As of July 1, 1999, the filing fee for Form TX is $30.

Appx50960

CONTINUATION SHEET
FOR APPLICATION FORMS

- This Continuation Sheet is used in conjunction with Forms CA, PA, SE, SR, TX, and VA, only. Indicate which basic form you are continuing in the space in the upper right-hand corner.
- If at all possible, try to fit the information called for into the spaces provided on the basic form.
- If you do not have enough space for all the information you need to give on the basic form, use this Continuation Sheet and submit it with the basic form.
- If you submit this Continuation Sheet, clip (do not tape or staple) it to the basic form and fold the two together before submitting them.
- Space A of this sheet is intended to identify the basic application.
  Space B is a continuation of Space 2 on the basic application. Space B is not applicable to Short forms.
  Space C (on the reverse side of this sheet) is for the continuation of Spaces 1, 4, or 6 on the basic application or for the continuation of Space 1 on any of the three Short Forms PA, TX, or VA.

FORM TX /CON

UNITED STATES COPYRIGHT OFFICE

TXu 1-036-062

TXu001036062

| PA | PAU | SE | SEG | SEU | SR | SRU | TX | TXU | VA | VAU |

EFFECTIVE DATE OF REGISTRATION

JUN 1 4 2002

(Month)   (Day)   (Year)

CONTINUATION SHEET RECEIVED

JUN 1 4 2002

Page __3__ of __4__ pages

DO NOT WRITE ABOVE THIS LINE. FOR COPYRIGHT OFFICE USE ONLY

A
Identification of Application

IDENTIFICATION OF CONTINUATION SHEET: This sheet is a continuation of the application for copyright registration on the basic form submitted for the following work:

- TITLE: (Give the title as given under the heading "Title of this Work" in Space 1 of the basic form.)

Cisco IOS 11.3

- NAME(S) AND ADDRESS(ES) OF COPYRIGHT CLAIMANT(S) : (Give the name and address of at least one copyright claimant as given in Space 4 of the basic form or Space 2 of any of the Short Forms PA, TX, or VA.)

Cisco Technology, Inc., 170 West Tasman Drive, San Jose, CA 95134

B
Continuation of Space 2

d

NAME OF AUTHOR ▼

(See Space C)

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

e

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

f

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

Use the reverse side of this sheet if you need more space for continuation of Spaces 1, 4, or 6 of the basic form or for the continuation of Space 1 on any of the three Short Forms

Appx50961

CONTINUATION OF (Check which):   ☐ Space 1   ☐ Space 4   ☐ Space 6   ☑ Space 2b

C

Name of Author	Work for Hire	Domicile	Anonymous	Pseudo-nymous	Nature of Contribution
HCL America, Inc.	Yes	United States	Yes	No	Computer code
HCL Consulting Limited	Yes	India	Yes	No	Computer code
Metaplex, Inc.	Yes	United States	Yes	No	Computer code
Technosoft Corp.	Yes	United States	Yes	No	Computer code
Nano Solutions	Yes	United States	Yes	No	Documentation
Oakhill Publications/ Computer Education Consulting	Yes	United States	Yes	No	Documentation
ABE Staffing Services, Inc.	Yes	United States	Yes	No	Documentation
Lasselle-Ramsay	Yes	United States	Yes	No	Documentation
Kevin Shafer	No	United States	Yes	No	Documentation
Rick Barron	No	United States	Yes	No	Documentation

Continuation of other Spaces

D

Certificate will be mailed in window envelope to this address:

Name ▼
Susanne S. Morales, Paralegal / Fenwick & West LLP

Number/Street/Apt ▼
2 Palo Alto Square

City/State/ZIP ▼
Palo Alto, CA 94306

YOU MUST:
• Complete all necessary spaces
• Sign your application

SEND ALL 3 ELEMENTS IN THE SAME PACKAGE:
1. Application form
2. Nonrefundable fee in check or money order payable to *Register of Copyrights*
3. Deposit Material

MAIL TO:
Library of Congress, Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000

Fees are effective through June 30, 2002. After that date, check the Copyright office Website at www.loc.gov/copyright or call (202) 707-3000 for current fee information.

Appx50962

CERTIFICATE OF REGISTRATION

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

REGISTER OF COPYRIGHTS
United States of America

OFFICIAL SEAL

FORM CA

For Supplementary Registration
UNITED STATES COPYRIGHT OFFICE

REGISTRATION NUMBER

TXu 1-057-804

RE

EFFECTIVE DATE OF SUPPLEMENTARY REGISTRATION

JAN	14	2003
Month	Day	Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

A

Title of Work ▼

Cisco IOS 11.3

Registration Number of the Basic Registration ▼	Year of Basic Registration ▼
TXu 1-036-062	2002
Name(s) of Author(s) ▼ Please see Space D for list of author names	Name(s) of Copyright Claimant(s) ▼ Cisco Technology, Inc.

B

Location and Nature of Incorrect Information in Basic Registration ▼

Line Number 2a _____ Line Heading or Description Name of Author

Incorrect Information as It Appears in Basic Registration ▼

Cisco Systems, Inc.

Corrected Information ▼

Cisco Systems Sales & Services, Inc.

Explanation of Correction ▼

correct name of author

C

Location and Nature of Information in Basic Registration to be Amplified ▼

Line Number 2b and C _____ Line Heading or Description Name of Author

Amplified Information and Explanation of Information ▼

Please add to the following to the list of authors:

Name of Author: Cisco Technology, Inc.
Work for Hire: Yes
Domicile: United States
Anonymous: No
Pseudonymous: No
Nature of Contribution: Computer code and documentation

MORE ON BACK ▶ • Complete all applicable spaces (D-G) on the reverse side of this page.
• See detailed instructions.   • Sign the form at Space F.

DO NOT WRITE HERE
Page 1 of 2 pages

Appx50963

FORM CA RECEIVED

JAN 14. 2003

FUNDS RECEIVED DATE

FORM CA

EXAMINED BY

DB

CORRESPONDENCE ☐

REFERENCE TO THIS REGISTRATION ADDED TO
BASIC REGISTRATION   ☒ YES   ☐ NO

FOR
COPYRIGHT
OFFICE
USE
ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

Continuation of: ☐ Part B *or* ☐ Part C ☒ Part A

Cisco Systems, Inc.
HCL America, Inc.
HCL Consulting Limited
Metaplex, Inc.
Technosoft Corp.
Nano Solutions
Oakhill Publications / Computer Education Consulting
ABE Staffing Services, Inc.
Lasselle-Ramsay
Kevin Shafer
Rick Barron

Correspondence: Give name and address to which correspondence about this application should be sent.
Tu T. Tsao, Esq.
Fenwick & West LLP
801 California Street
Mountain View, CA 94041

Phone (650) 335-7696   Fax (650) 938-5200   Email ttsao@fenwick.com

Deposit Account: If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.

Name _____

Account Number _____

Certification* I, the undersigned, hereby certify that I am the: (Check only one)

☐ author   ☐ owner of exclusive right(s)
☐ other copyright claimant   ☒ duly authorized agent of Cisco Technology, Inc.

Name of author or other copyright claimant, or owner of exclusive right(s) ▲

of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

Typed or printed name ▼ Robert A. Barr, Worldwide Patent Counsel   **Date ▼** 1/8/03

Handwritten signature (X) ▼

**Certificate
will be
mailed in
window
envelope
to this
address:**

Name ▼
Susanne S. Morales, Paralegal / Fenwick & West LLP

Number/Street/Apt ▼
801 California Street

City/State/ZIP ▼
Mountain View, CA 94041

YOU MUST:
• Complete all necessary spaces
• Sign your application in Space F

SEND ALL ELEMENTS
IN THE SAME PACKAGE:
1. Application form
2. Nonrefundable filing fee in check or
   money order payable to *Register of
   Copyrights*

MAIL TO:
Library of Congress
Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000

Fees are subject to
change. For current
fees, check the
Copyright Office
website at
www.copyright.gov,
write the Copyright
Office, or call
(202) 707-3000.

*17 U.S.C. § 506(e): Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 409, or in any written statement filed in connection
with the application, shall be fined not more than $2,500.

Rev: June 2002—20,000   Web Rev: June 2002   ♻ Printed on recycled paper

U.S. Government Printing Office: 2000-461-113/20,021

Appx50964

CERTIFICATE OF REGISTRATION

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

REGISTER OF COPYRIGHTS
United States of America

OFFICIAL SEAL

FORM TX
For a Nondramatic Literary Work
UNITED STATES COPYRIGHT OFFICE

TXu 1-036-064

TXu00103606

EFFECTIVE DATE OF REGISTRATION

JUN 1 4 2002

Month   Day   Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

1

TITLE OF THIS WORK ▼

Cisco IOS 12.0

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS Release 12.0; Cisco IOS Version 12.0; Cisco Internetwork Operating System 12.0; Cisco Internetwork Operating System Release 12.0; Cisco Internetwork Operating System Version 12.0

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared.   **Title of Collective Work ▼**

If published in a periodical or serial give: **Volume ▼**   **Number ▼**   **Issue Date ▼**   **On Pages ▼**

2

a

NAME OF AUTHOR ▼

Cisco Systems, Inc.

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?
☒ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶
{ Domiciled in ▶ United States

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☒ No
Pseudonymous? ☐ Yes ☒ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼
New and revised computer code and accompanying documentation

NOTE
Under the law, the "author" of a "work made for hire" is generally the employer, not the employee (see instructions). For any part of this work that was "made for hire" check "Yes" in the space provided, give the employer (or other person for whom the work was prepared) as "Author" of that part, and leave the space for dates of birth and death blank.

b

NAME OF AUTHOR ▼
See Attached Form TX/CON for Additional Authors

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶
{ Domiciled in ▶

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

c

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶
{ Domiciled in ▶

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

3

a
YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED *This information must be given* ◀ *Year in all cases.*
1998

b
DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK *Complete this information ONLY if this work has been published.* Month ▶ ____ Day ▶ ____ Year ▶ ____
◀ Nation

4

COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2. ▼

Cisco Technology, Inc.
170 West Tasman Drive
San Jose, CA 95134

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2, give a brief statement of how the claimant(s) obtained ownership of the copyright. ▼

By agreement

See instructions before completing this space.

APPLICATION RECEIVED
JUN 1 4 2002
ONE DEPOSIT RECEIVED
JUN 1 4 2002
TWO DEPOSITS RECEIVED

FUNDS RECEIVED

DO NOT WRITE HERE
OFFICE USE ONLY

MORE ON BACK ▶ • Complete all applicable spaces (numbers 5-9) on the reverse side of this page.
• See detailed instructions.   • Sign the form at line 8.

DO NOT WRITE HERE
Page 1 of __4__ pages

Appx50965

EXAMINED BY _TMS'_

CHECKED BY

FORM TX

☐ CORRESPONDENCE
☐ Yes

FOR
COPYRIGHT
OFFICE
USE
ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office?

☑ Yes ☐ No If your answer is "Yes," why is another registration being sought? (Check appropriate box.) ▼

a. ☐ This is the first published edition of a work previously registered in unpublished form.

b. ☐ This is the first application submitted by this author as copyright claimant.

c. ☑ This is a changed version of the work, as shown by space 6 on this application.

If your answer is "Yes," give: Previous Registration Number ▶ Pending   Year of Registration ▶ 2002

5

DERIVATIVE WORK OR COMPILATION
Preexisting Material Identify any preexisting work or works that this work is based on or incorporates. ▼

Prior works by claimant and preexisting third party computer code

a **6**

See instructions
before completing
this space.

Material Added to This Work Give a brief, general statement of the material that has been added to this work and in which copyright is claimed. ▼
New and revised computer code and accompanying documentation

b

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.
Name ▼   Account Number ▼

a **7**

CORRESPONDENCE Give name and address to which correspondence about this application should be sent. Name/Address/Apt/City/State/ZIP ▼
Tu T. Tsao, Esq.
Fenwick & West LLP
2 Palo Alto Square
Palo Alto, CA 94306

b

Area code and daytime telephone number ▶ (650) 858-7696   Fax number ▶ (650) 494-1417

Email ▶ ttsao@fenwick.com

CERTIFICATION* I, the undersigned, hereby certify that I am the
                                    Check only one ▶
☐ author
☐ other copyright claimant
☐ owner of exclusive right(s)
☑ authorized agent of Cisco Technology, Inc.

of the work identified in this application and that the statements made
by me in this application are correct to the best of my knowledge.

Name of author or other copyright claimant, or owner of exclusive right(s) ▲

8

Typed or printed name and date ▼ If this application gives a date of publication in space 3, do not sign and submit it before that date.

Robert A. Barr, Worldwide Patent Counsel   Date ▶

Handwritten signature (X) ▼

X _____

Certificate
will be
mailed in
window
envelope
to this
address:

Name ▼
Susanne S. Morales, Paralegal / Fenwick & West LLP

Number/Street/Apt ▼
2 Palo Alto Square

City/State/ZIP ▼
Palo Alto, CA 94306

YOU MUST:
• Complete all necessary spaces
• Sign your application in space 8
SEND ALL 3 ELEMENTS
IN THE SAME PACKAGE:
1. Application form
2. Nonrefundable filing fee in check or money order
   payable to Register of Copyrights
3. Deposit material
MAIL TO:
Library of Congress
Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000

As of
July 1,
1999,
the
filing
fee for
Form TX
is $30.

9

*17 U.S.C. § 506(e): Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 409, or in any written statement filed in connection
with the application, shall be fined not more than $2,500.   ⊕ PRINTED ON RECYCLED PAPER

June 1999—200,000
WEB REV: June 1999

☆U.S. GOVERNMENT PRINTING OFFICE: 1999-454-879/49

Appx50966

CONTINUATION SHEET
FOR APPLICATION FORMS

Ⓔ **FORM** ___ TX ___ /CON

UNITED STATES COPYRIGHT OFFICE

TXu 1-036-064

T:0001036064

PA	PAU	SE	SEG	SEU	SR	SRU	TX	TXU	VA	VAU

EFFECTIVE DATE OF REGISTRATION

JUN 1 4 2002

(Month)   (Day)   (Year)

CONTINUATION SHEET RECEIVED

JUN 1 4 2002

Page ___3___ of ___4___ pages

- This Continuation Sheet is used in conjunction with Forms CA, PA, SE, SR, TX, and VA, **only.**
  Indicate which basic form you are continuing in the space in the upper right-hand corner.
- If at all possible, try to fit the information called for into the spaces provided on the basic form.
- If you do not have enough space for all the information you need to give on the basic form, use
  this Continuation Sheet and submit it with the basic form.
- If you submit this Continuation Sheet, clip (do not tape or staple) it to the basic form and fold the
  two together before submitting them.
- Space A of this sheet is intended to identify the basic application.
  Space B is a continuation of Space 2 on the basic application. Space B is not applicable
  to Short forms.
  Space C (on the reverse side of this sheet) is for the continuation of Spaces 1, 4, or 6 on
  the basic application or for the continuation of Space 1 on any of the three Short Forms
  PA, TX, or VA.

DO NOT WRITE ABOVE THIS LINE. FOR COPYRIGHT OFFICE USE ONLY

A
Identification of Application

IDENTIFICATION OF CONTINUATION SHEET: This sheet is a continuation of the application for copyright registration on the basic form submitted for the following work:
- TITLE: (Give the title as given under the heading "Title of this Work" in Space 1 of the basic form.)

  Cisco IOS 12.0

- NAME(S) AND ADDRESS(ES) OF COPYRIGHT CLAIMANT(S) : (Give the name and address of at least one copyright claimant as given in Space 4 of the basic form or Space 2 of any of the Short Forms PA, TX, or VA.)

  Cisco Technology, Inc., 170 West Tasman Drive, San Jose, CA 95134

B
Continuation of Space 2

d

NAME OF AUTHOR ▼

(See Space C)

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
{ Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

e

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
{ Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

f

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
{ Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

Use the reverse side of this sheet if you need more space for continuation of Spaces 1, 4, or 6 of the basic form or for the

Appx50967

CONTINUATION OF (Check which):   ☐ Space 1   ☐ Space 4   ☐ Space 6   ☑ Space 2b

C

Name of Author	Work for Hire	Domicile	Anonymous	Pseudo-nymous	Nature of Contribution
Adecco Employment Services	Yes	United States	Yes	No	Computer code
Avnisoft Corporation	Yes	United States	Yes	No	Computer code
HCL Consulting Limited	Yes	United States	Yes	No	Computer code
HCL America, Inc.	Yes	India	Yes	No	Computer code
H.L. Yoh Company LLC	Yes	United States	Yes	No	Computer code
Aquas	Yes	United States	Yes	No	Computer code
Metaplex, Inc.	Yes	United States	Yes	No	Computer code
Rapidigm	Yes	United States	Yes	No	Computer code
Wipro Limited	Yes	India	Yes	No	Computer code
Lasselle-Ramsay	Yes	United States	Yes	No	Documentation
Oakhill Publications/ Computer Education Consulting	Yes	United States	Yes	No	Documentation
Rick Barron	No	United States	Yes	No	Documentation
On-Call Consultants, Inc.	Yes	United States	Yes	No	Documentation
Judy Melanson	No	United States	Yes	No	Documentation

Continuation of other Spaces

D

Certificate will be mailed in window envelope to this address:	Name ▼ Susanne S. Morales, Paralegal / Fenwick & West LLP
	Number/Street/Apt ▼ 2 Palo Alto Square
	City/State/ZIP ▼ Palo Alto, CA 94306

YOU MUST:
• Complete all necessary spaces
• Sign your application

SEND ALL 3 ELEMENTS IN THE SAME PACKAGE:
1. Application form
2. Nonrefundable fee in check or money order payable to *Register of Copyrights*
3. Deposit Material

MAIL TO:
Library of Congress, Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000

Fees are effective through June 30, 2002. After that date, check the Copyright Office Website at www.loc.gov/copyright or call (202) 707-3000 for current fee information.

Appx50968

☆U.S.GOVERNMENT PRINTING OFFICE: 2000-461-113/78

CERTIFICATE OF REGISTRATION

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

REGISTER OF COPYRIGHTS
United States of America

OFFICIAL SEAL

FORM CA
For Supplementary Registration
UNITED STATES COPYRIGHT OFFICE

REGISTRATION NUMBER

TXu 1-057-805

T>
T u0 1057805

EFFECTIVE DATE OF SUPPLEMENTARY REGISTRATION

JAN   14   2003
Month   Day   Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

A

Title of Work ▼
Cisco IOS 12.0

Registration Number of the Basic Registration ▼	Year of Basic Registration ▼
TXu 1-036-064	2002

Name(s) of Author(s) ▼	Name(s) of Copyright Claimant(s) ▼
Please see Space D for list of author names	Cisco Technology, Inc.

B

Location and Nature of Incorrect Information in Basic Registration ▼

Line Number __2a__   Line Heading or Description __Name of Author__

Incorrect Information as It Appears in Basic Registration ▼

Cisco Systems, Inc.

Corrected Information ▼

Cisco Systems Sales & Services, Inc.

Explanation of Correction ▼

correct name of author

C

Location and Nature of Information in Basic Registration to be Amplified ▼

Line Number __2b and C__   Line Heading or Description __Name of Author__

Amplified Information and Explanation of Information ▼

Please add the following to the list of authors:

Name of Author: Cisco Technology, Inc.
Work for Hire: Yes
Domicile: United States
Anonymous: No
Pseudonymous: No
Nature of Contribution: Computer code and documentation

MORE ON BACK ▶ • Complete all applicable spaces (D-G) on the reverse side of this page.
• See detailed instructions.   • Sign the form at Space F.

DO NOT WRITE HERE
Page 1 of __2__ pages

Appx50969

FORM CA RECEIVED   FORM CA

JAN 1 4. 2003

FUNDS RECEIVED DATE

EXAMINED BY

CORRESPONDENCE ☐

REFERENCE TO THIS REGISTRATION ADDED TO
BASIC REGISTRATION   ☒ YES   ☐ NO

FOR
COPYRIGHT
OFFICE
USE
ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

Continuation of: ☐ Part B *or* ☐ Part C   ☑ Part A

Cisco Systems, Inc.
Adecco Employment Services
Avnisoft Corporation
HCL Consulting Limited
HCL America, Inc.
H.L. Yoh Company LLC
Aquas
Metaplex, Inc.
Rapidigm
Wipro Limited
Lasselle-Ramsay
Oakhill Publications / Computer Education Consulting
Rick Barron
On-Call Consultants, Inc.
Judy Melanson

Correspondence: Give name and address to which correspondence about this application should be sent.

Tu T. Tsao, Esq.
Fenwick & West LLP
801 California Street
Mountain View, CA 94041

Phone (650) 335-7696   Fax (650) 938-5200   Email ttsao@fenwick.com

Deposit Account: If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.

Name

Account Number

Certification* I, the undersigned, hereby certify that I am the: (Check only one)

☐ author   ☐ owner of exclusive right(s)
☐ other copyright claimant ☑ duly authorized agent of Cisco Technology, Inc.

Name of author or other copyright claimant, or owner of exclusive right(s) ▲

of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

Typed or printed name ▼ Robert A. Barr, Worldwide Patent Counsel   Date ▼ 1/8/03

Handwritten signature (X) ▼

Certificate will be mailed in window envelope to this address:

Name ▼ Susanne S. Morales, Paralegal / Fenwick & West LLP

Number/Street/Apt ▼ 801 California Street

City/State/ZIP ▼ Mountain View, CA 94041

YOU MUST:
• Complete all necessary spaces
• Sign your application in Space F

SEND ALL ELEMENTS
IN THE SAME PACKAGE:
1. Application form
2. Nonrefundable filing fee in check or money order payable to *Register of Copyrights*

MAIL TO:
Library of Congress
Copyright Office
101 Independence Avenue, S.E
Washington, D.C. 20559-6000

Fees are subject to change. For current fees, check the Copyright Office website at www.copyright.gov, write the Copyright Office, or call (202) 707-3000.

*17 U.S.C. § 506(e): Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 409, or in any written statement filed in connection with the application, shall be fined not more than $2,500.

Rev. June 2002—20,000   Web Rev. June 2002   ♻ Printed on recycled paper   U.S. Government Printing Office: 2000-461-113/20,021

CERTIFICATE OF REGISTRATION

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

REGISTER OF COPYRIGHTS
United States of America

OFFICIAL SEAL

FORM TX
For a Nondramatic Literary Work
UNITED STATES COPYRIGHT OFFICE

TXu 1-036-066

TXu001036066

EFFECTIVE DATE OF REGISTRATION

JUN 1 4 2002

Month   Day   Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

1

TITLE OF THIS WORK ▼

Cisco IOS 12.1

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS Release 12.1; Cisco IOS Version 12.1; Cisco Internetwork Operating System 12.1; Cisco Internetwork Operating System Release 12.1; Cisco Internetwork Operating System Version 12.1

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared.   **Title of Collective Work ▼**

If published in a periodical or serial give: Volume ▼   Number ▼   Issue Date ▼   On Pages ▼

2

a NAME OF AUTHOR ▼

Cisco Systems, Inc.

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?
☑ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶_____
Domiciled in▶ United States

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☑ No
Pseudonymous?   ☐ Yes ☑ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼
New and revised computer code and accompanying documentation

b NAME OF AUTHOR ▼
See Attached Form TX/CON for Additional Authors

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶_____
Domiciled in▶_____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous?   ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

c NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶_____
Domiciled in▶_____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous?   ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

NOTE

Under the law, the "author" of a "work made for hire" is generally the employer, not the employee (see instructions). For any part of this work that was "made for hire" check "Yes" in the space provided, give the employer (or other person for whom the work was prepared) as "Author" of that part, and leave the space for dates of birth and death blank.

3

a YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED This information must be given in all cases.
2000 ◀ Year

b DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK Complete this information ONLY if this work has been published.
Month ▶ _____ Day ▶ _____ Year ▶ _____ ◀ Nation

4

COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2. ▼

Cisco Technology, Inc.
170 West Tasman Drive
San Jose, CA 95134

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2, give a brief statement of how the claimant(s) obtained ownership of the copyright. ▼

By agreement

APPLICATION RECEIVED
JUN 1 4 2002

ONE DEPOSIT RECEIVED
JUN 1 4 2002

TWO DEPOSITS RECEIVED

FUNDS RECEIVED

DO NOT WRITE HERE OFFICE USE ONLY

See instructions before completing this space.

MORE ON BACK ▶ • Complete all applicable spaces (numbers 5-9) on the reverse side of this page.
• See detailed instructions.   • Sign the form at line 8.

DO NOT WRITE HERE
Page 1 of _____ pages

Appx50971

EXAMINED BY *TMS*

CHECKED BY

☐ CORRESPONDENCE
Yes

FORM TX

FOR
COPYRIGHT
OFFICE
USE
ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office?

☑ Yes ☐ No If your answer is "Yes," why is another registration being sought? (Check appropriate box.) ▼

a. ☐ This is the first published edition of a work previously registered in unpublished form.

b. ☐ This is the first application submitted by this author as copyright claimant.

c. ☑ This is a changed version of the work, as shown by space 6 on this application.

If your answer is "Yes," give: Previous Registration Number ▶ Pending   Year of Registration ▶ 2002

5

DERIVATIVE WORK OR COMPILATION
Preexisting Material Identify any preexisting work or works that this work is based on or incorporates. ▼

Prior works by claimant and preexisting third party computer code

a

6

Material Added to This Work Give a brief, general statement of the material that has been added to this work and in which copyright is claimed. ▼
New and revised computer code and accompanying documentation

b

See Instructions
before completing
this space.

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.
Name ▼   Account Number ▼

a

7

CORRESPONDENCE Give name and address to which correspondence about this application should be sent.   Name/Address/Apt/City/State/ZIP ▼
Tu T. Tsao, Esq.
Fenwick & West LLP
2 Palo Alto Square
Palo Alto, CA 94306

b

Area code and daytime telephone number ▶ (650) 858-7696   Fax number ▶   (650) 494-1417

Email ▶ ttsao@fenwick.com

CERTIFICATION* I, the undersigned, hereby certify that I am the

Check only one ▶

☐ author
☐ other copyright claimant
☐ owner of exclusive right(s)
☑ authorized agent of Cisco Technology, Inc.

of the work identified in this application and that the statements made
by me in this application are correct to the best of my knowledge.

Name of author or other copyright claimant, or owner of exclusive right(s) ▲

8

Typed or printed name and date ▼ If this application gives a date of publication in space 3, do not sign and submit it before that date.

Robert A. Barr, Worldwide Patent Counsel   Date ▶

Handwritten signature (X) ▼

X

**Certificate
will be
mailed in
window
envelope
to this
address:**

Name ▼
Susanne S. Morales, Paralegal / Fenwick & West LLP

Number/Street/Apt ▼
2 Palo Alto Square

City/State/ZIP ▼
Palo Alto, CA 94306

YOU MUST:
• Complete all necessary spaces
• Sign your application in space 8
SEND ALL 3 ELEMENTS
IN THE SAME PACKAGE:
1. Application form
2. Nonrefundable filing fee in check or money order
   payable to *Register of Copyrights*
3. Deposit material
MAIL TO:
Library of Congress
Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000

As of
July 1,
1999,
the
filing
fee for
Form TX
is $30.

9

*17 U S C. § 506(e): Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 409, or in any written statement filed in connection with the application, shall be fined not more than $2,500.
June 1999—200,000
WEB REV: June 1999

☺ PRINTED ON RECYCLED PAPER   ☆U.S. GOVERNMENT PRINTING OFFICE: 1999-454-879/49

Appx50972

CONTINUATION SHEET
FOR APPLICATION FORMS

- This Continuation Sheet is used in conjunction with Forms CA, PA, SE, SR, TX, and VA, only. Indicate which basic form you are continuing in the space in the upper right-hand corner.
- If at all possible, try to fit the information called for into the spaces provided on the basic form.
- If you do not have enough space for all the information you need to give on the basic form, use this Continuation Sheet and submit it with the basic form.
- If you submit this Continuation Sheet, clip (do not tape or staple) it to the basic form and fold the two together before submitting them.
- Space A of this sheet is intended to identify the basic application.
  Space B is a continuation of Space 2 on the basic application. Space B is not applicable to Short forms.
  Space C (on the reverse side of this sheet) is for the continuation of Spaces 1, 4, or 6 on the basic application or for the continuation of Space 1 on any of the three Short Forms PA, TX, or VA.

☑ FORM ___TX___ /CON
UNITED STATES COPYRIGHT OFFICE

TXu 1-036-066

| PA | PAU | SE | SEG | SEU | SR | SRU | TX | TXU | VA | VAU |

EFFECTIVE DATE OF REGISTRATION

JUN 1 4 2002

(Month)   (Day)   (Year)

CONTINUATION SHEET RECEIVED

JUN 1 4 2002

Page ___3___ of ___4___ pages

DO NOT WRITE ABOVE THIS LINE. FOR COPYRIGHT OFFICE USE ONLY

A

Identification
of
Application

IDENTIFICATION OF CONTINUATION SHEET: This sheet is a continuation of the application for copyright registration on the basic form submitted for the following work:
- TITLE: (Give the title as given under the heading "Title of this Work" in Space 1 of the basic form.)

Cisco IOS 12.1

- NAME(S) AND ADDRESS(ES) OF COPYRIGHT CLAIMANT(S): (Give the name and address of at least one copyright claimant as given in Space 4 of the basic form or Space 2 of any of the Short Forms PA, TX, or VA.)

Cisco Technology, Inc., 170 West Tasman Drive, San Jose, CA 95134

B

Continuation
of Space 2

d

NAME OF AUTHOR ▼
(See Space C)

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
     { Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

e

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
     { Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
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Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

f

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
     { Domiciled in ▶ _____

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Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

Use the reverse side of this sheet if you need more space for continuation of Spaces 1, 4, or 6 of the basic form or for the continuation of Space 1 on any of the Short Forms PA, TX, or VA.

Appx50973

CONTINUATION OF (Check which):   ☐ Space 1   ☐ Space 4   ☐ Space 6   ☑ Space 2b

C

Continuation of other Spaces

Name of Author	Work for Hire	Domicile	Anonymous	Pseudo-nymous	Nature of Contribution
ABE Staffing Services, Inc.	Yes	United States	Yes	No	Computer code
Adecco Employment Services	Yes	United States	Yes	No	Computer code
A.S.K. Office Personnel Solutions	Yes	Australia	Yes	No	Computer code
Computer People	Yes	United States	Yes	No	Computer code
Cotelligent	Yes	United States	Yes	No	Computer code
Devsoft Corporation	Yes	United States	Yes	No	Computer code
HCL America, Inc.	Yes	United States	Yes	No	Computer code
HCL Consulting Limited	Yes	India	Yes	No	Computer code
IT & E Corporation	Yes	United States	Yes	No	Computer code
Ma Foi Management Consultants Limited	Yes	India	Yes	No	Computer code
Maprik Holdings Pty Ltd	Yes	Australia	Yes	No	Computer code
Metaplex, Inc.	Yes	United States	Yes	No	Computer code
Pipelink	Yes	United States	Yes	No	Computer code
Rapidigm	Yes	United States	Yes	No	Computer code
Softsol Resources, Inc.		India			
Wipro Limited	Yes	United States	Yes	No	Computer code
Lasselle-Ramsay	Yes	United States	Yes	No	Documentation
Oakhill Publications/ Computer Education Consulting	Yes	United States	Yes	No	Documentation
Essential Solutions	Yes	United States	Yes	No	Documentation
Rick Barron	No	United States	Yes	No	Documentation

D

Certificate will be mailed in window envelope to this address:

Name ▼
Susanne S. Morales, Paralegal / Fenwick & West LLP

Number/Street/Apt ▼
2 Palo Alto Square

City/State/ZIP ▼
Palo Alto, CA 94306

YOU MUST:
• Complete all necessary spaces
• Sign your application

SEND ALL 3 ELEMENTS IN THE SAME PACKAGE:
1. Application form
2. Nonrefundable fee in check or money order payable to *Register of Copyrights*
3. Deposit Material

MAIL TO:
Library of Congress, Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000

Fees are effective through June 30, 2002. After that date, check the Copyright office Website at www.loc.gov/copyright or call (202) 707-3000 for current fee information.

☆U.S. GOVERNMENT PRINTING OFFICE: 2000-461-113/78

CERTIFICATE OF REGISTRATION

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

REGISTER OF COPYRIGHTS
United States of America

OFFICIAL SEAL

FORM CA
For Supplementary Registration
UNITED STATES COPYRIGHT OFFICE

REGISTRATION NUMBER

TXu 1-057-807

EFFECTIVE DATE OF SUPPLEMENTARY REGISTRATION

JAN 14 2003
Month   Day   Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

A

Title of Work ▼

Cisco IOS 12.1

Registration Number of the Basic Registration ▼	Year of Basic Registration ▼
TXu 1-036-066	2002
Name(s) of Author(s) ▼ Please see Space D for list of author names	Name(s) of Copyright Claimant(s) ▼ Cisco Technology, Inc.

B

Location and Nature of Incorrect Information in Basic Registration ▼

Line Number 2a _____ Line Heading or Description Name of Author

Incorrect Information as It Appears in Basic Registration ▼

Cisco Systems, Inc.

Corrected Information ▼

Cisco Systems Sales & Services, Inc.

Explanation of Correction ▼

correct name of author

C

Location and Nature of Information in Basic Registration to be Amplified ▼

Line Number 2b and C _____ Line Heading or Description Name of Author

Amplified Information and Explanation of Information ▼

Please add the following to the list of authors:

Name of Author: Cisco Technology, Inc.
Work for Hire: Yes
Domicile: United States
Anonymous: No
Pseudonymous: No
Nature of Contribution: Computer code and documentation

MORE ON BACK ▶ • Complete all applicable spaces (D-G) on the reverse side of this page.
• See detailed instructions.   • Sign the form at Space F.

DO NOT WRITE HERE
Page 1 of 2 pages

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JAN 14. 2003

FUNDS RECEIVED DATE   .

FORM CA

EXAMINED BY

TAB

CORRESPONDENCE ☐

REFERENCE TO THIS REGISTRATION ADDED TO
BASIC REGISTRATION   ☒YES   ☐ NO

FOR
COPYRIGHT
OFFICE
USE
ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

Continuation of: ☐ Part B *or* ☐ Part C   ☑ Part A

Cisco Systems, Inc.
ABE Staffing Services, Inc.
Adecco Employment Services
A.S.K. Office Personnel Solutions
Computer People
Cotelligent
Devsoft Corporation
HCL America, Inc.
HCL Consulting Limited
IT & E Corporation
Ma Foi Management Consultants Limited
Maprik Holdings Pty Ltd
Metaplex, Inc.

Pipelink
Rapidigm
Softsol Resources, Inc.
Wipro Limited
Lasselle-Ramsay
Oakhill Publications / Computer Education
  Consulting
Essential Solutions
Rick Barron

Correspondence: Give name and address to which correspondence about this application should be sent.

Tu T. Tsao, Esq.
Fenwick & West LLP
801 California Street
Mountain View, CA 94041

Phone (650) 335-7696   Fax (650) 938-5200   Email ttsao@fenwick.com

Deposit Account: If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.

Name _____

Account Number _____

Certification* I, the undersigned, hereby certify that I am the: (Check only one)

☐ author   ☐ owner of exclusive right(s)
☐ other copyright claimant   ☑ duly authorized agent of __Cisco Technology, Inc.__
                                               Name of author or other copyright claimant, or owner of exclusive right(s) ▲
        of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

Typed or printed name ▼ Robert A. Barr, Worldwide Patent Counsel

Date ▼ 1 - 8 - 03

Handwritten signature (X) ▼ *[signature]*

Certificate will be mailed in window envelope to this address:

Name ▼
Susanne S. Morales, Paralegal / Fenwick & West LLP

Number/Street/Apt ▼
801 California Street

City/State/ZIP ▼
Mountain View, CA 94041

YOU MUST:
• Complete all necessary spaces
• Sign your application in Space F

SEND ALL ELEMENTS IN THE SAME PACKAGE:
1. Application form
2. Nonrefundable filing fee in check or money order payable to *Register of Copyrights*

MAIL TO:
Library of Congress
Copyright Office
101 Independence Avenue, S.E
Washington, D.C. 20559-6000

Fees are subject to change. For current fees, check the Copyright Office website at www.copyright.gov, write the Copyright Office, or call (202) 707-3000.

Rev: June 2002—20,000 Web Rev: June 2002 ⊕ Printed on recycled paper

U.S. Government Printing Office: 2000-461-113/20,021

Appx50976

CERTIFICATE OF REGISTRATION

FORM TX

For a Nondramatic Literary Work
UNITED STATES COPYRIGHT OFFICE

RE

TXu 1-036-065

TXu001036065

EFFECTIVE DATE OF REGISTRATION

JUN 1 4 2002

Month   Day   Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

1

TITLE OF THIS WORK ▼

Cisco IOS 12.2

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS Release 12.2; Cisco IOS Version 12.2; Ciso Internetwork Operating System 12.2; Cisco Internetwork Operating System Release 12.2; Cisco Internetwork Operating System Version 12.2

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared.   Title of Collective Work ▼

If published in a periodical or serial give: Volume ▼   Number ▼   Issue Date ▼   On Pages ▼

2

a NAME OF AUTHOR ▼

Cisco Systems, Inc.

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?
☑ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶_____
Domiciled in▶ United States

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☑ No
Pseudonymous?   ☐ Yes ☑ No

If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼
New and revised computer code and accompanying documentation

b NAME OF AUTHOR ▼

See Attached Form TX/CON for Additional Authors

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶_____
Domiciled in▶_____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous?   ☐ Yes ☐ No

If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

c NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶_____
Domiciled in▶_____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous?   ☐ Yes ☐ No

If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

3

a YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED This information must be given in all cases.
2001 ◀Year

b DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK
Complete this information ONLY if this work has been published.
Month ▶_____ Day ▶_____ Year ▶_____ ◀ Nation

4

COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2. ▼

Cisco Technology, Inc.
170 West Tasman Drive
San Jose, CA 95134

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2, give a brief statement of how the claimant(s) obtained ownership of the copyright. ▼

By agreement

APPLICATION RECEIVED
JUN 1 4 2002
ONE DEPOSIT RECEIVED
JUN 1 4 2002
TWO DEPOSITS RECEIVED

FUNDS RECEIVED

MORE ON BACK ▶ • Complete all applicable spaces (numbers 5-9) on the reverse side of this page.
• See detailed instructions.   • Sign the form at line 8.

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Page 1 of_____ pages

EXAMINED BY _TMS_

CHECKED BY

☐ CORRESPONDENCE
  Yes

FORM TX

FOR COPYRIGHT OFFICE USE ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office?

☑ Yes ☐ No If your answer is "Yes," why is another registration being sought? (Check appropriate box.) ▼

a. ☐ This is the first published edition of a work previously registered in unpublished form.

b. ☐ This is the first application submitted by this author as copyright claimant.

c. ☑ This is a changed version of the work, as shown by space 6 on this application.

If your answer is "Yes," give: Previous Registration Number ▶ Pending   Year of Registration ▶ 2002

5

DERIVATIVE WORK OR COMPILATION
Preexisting Material Identify any preexisting work or works that this work is based on or incorporates. ▼

Prior works by claimant and preexisting third party computer code

a

6

See Instructions before completing this space.

Material Added to This Work Give a brief, general statement of the material that has been added to this work and in which copyright is claimed. ▼
New and revised computer code and accompanying documentation

b

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.
Name ▼   Account Number ▼

a

7

CORRESPONDENCE Give name and address to which correspondence about this application should be sent.   Name/Address/Apt/City/State/ZIP ▼
Tu T. Tsao, Esq.
Fenwick & West LLP
2 Palo Alto Square
Palo Alto, CA 94306

b

Area code and daytime telephone number ▶ (650) 858-7696   Fax number ▶ (650) 494-1417

Email ▶ ttsao@fenwick.com

CERTIFICATION* I, the undersigned, hereby certify that I am the

Check only one ▶
☐ author
☐ other copyright claimant
☐ owner of exclusive right(s)
☑ authorized agent of _Cisco Technology, Inc._

of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

Name of author or other copyright claimant, or owner of exclusive right(s) ▲

8

Typed or printed name and date ▼ If this application gives a date of publication in space 3, do not sign and submit it before that date.

Robert A. Barr, Worldwide Patent Counsel   Date ▶

Handwritten signature (X) ▼

X _____

Certificate will be mailed in window envelope to this address:

Name ▼
Susanne S. Morales, Paralegal / Fenwick & West LLp

Number/Street/Apt ▼
2 Palo Alto Square

City/State/ZIP ▼
Palo Alto, CA 94306

YOU MUST:
· Complete all necessary spaces
· Sign your application in space 8

SEND ALL 3 ELEMENTS IN THE SAME PACKAGE:
1. Application form
2. Nonrefundable filing fee in check or money order payable to Register of Copyrights
3. Deposit material

MAIL TO:
Library of Congress
Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000

As of July 1, 1999, the filing fee for Form TX is $30.

9

Appx50978

CONTINUATION SHEET
FOR APPLICATION FORMS

- This Continuation Sheet is used in conjunction with Forms CA, PA, SE, SR, TX, and VA, only. Indicate which basic form you are continuing in the space in the upper right-hand corner.
- If at all possible, try to fit the information called for into the spaces provided on the basic form.
- If you do not have enough space for all the information you need to give on the basic form, use this Continuation Sheet and submit it with the basic form.
- If you submit this Continuation Sheet, clip (do not tape or staple) it to the basic form and fold the two together before submitting them.
- Space A of this sheet is intended to identify the basic application.
  Space B is a continuation of Space 2 on the basic application. Space B is not applicable to Short forms.
  Space C (on the reverse side of this sheet) is for the continuation of Spaces 1, 4, or 6 on the basic application or for the continuation of Space 1 on any of the three Short Forms PA, TX, or VA.

@FORM __TX__ **/CON**
UNITED STATES COPYRIGHT OFFICE

TXu 1-036-065

TXu0010360650

| PA | PAU | SE | SEG | SEU | SR | SRU | TX | TXU | VA | VAU |

EFFECTIVE DATE OF REGISTRATION

JUN 1 4 2002

(Month)   (Day)   (Year)

CONTINUATION SHEET RECEIVED

JUN 1 4 2002

Page __3__ of __4__ pages

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A
Identification of Application

IDENTIFICATION OF CONTINUATION SHEET: This sheet is a continuation of the application for copyright registration on the basic form submitted for the following work:
- TITLE: (Give the title as given under the heading "Title of this Work" in Space 1 of the basic form.)
  Cisco IOS 12.2

- NAME(S) AND ADDRESS(ES) OF COPYRIGHT CLAIMANT(S) : (Give the name and address of at least one copyright claimant as given in Space 4 of the basic form or Space 2 of any of the Short Forms PA, TX, or VA.)
  Cisco Technology, Inc., 170 West Tasman Drive, San Jose, CA 95134

B
Continuation of Space 2

d

NAME OF AUTHOR ▼
(See Space C)

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
     Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous?   ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

e

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
     Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous?   ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

f

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
     Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous?   ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

Use the reverse side of this sheet if you need more space for continuation of Spaces 1, 4, or 6 of the basic form or for the continuation of Space 1 on any of the Short Forms PA, TX, or VA.

Appx50979

CONTINUATION OF (Check which):   ☐ Space 1   ☐ Space 4   ☐ Space 6   ☑ Space 2b

C

Continuation of other Spaces

Name of Author	Work for Hire	Domicile	Anonymous	Pseudo-nymous	Nature of Contribution
ABE Staffing Services, Inc.	Yes	United States	Yes	No	Computer code and documentation
Adecco Employment Services	Yes	United States	Yes	No	Computer code and documentation
Acionyx, Incorporated	Yes	United States	Yes	No	Computer code
Greenwood Group, dba Manpower Technical Services	Yes	United States	Yes	No	Computer code and documentation
HCL America, Inc.	Yes	United States	Yes	No	Computer code
HCL Consulting Limited	Yes	United States	Yes	No	Computer code
H.L. Yoh Company LLC	Yes	United States	Yes	No	Computer code
Hughes Software Systems USA	Yes	United States	Yes	No	Computer code
InfoSys Technologies Limited	Yes	United States	Yes	No	Computer code
Insight Solutions, Inc.	Yes	United States	Yes	No	Computer code
IT & E Corporation	Yes	United States	Yes	No	Computer code
Ma Foi Management Consultants Limited	Yes	United States	Yes	No	Computer code
Metalogic, S.A.R.L.	Yes	United States	Yes	No	Computer code
Metaplex, Inc.	Yes	United States	Yes	No	Computer code
Rapidigm	Yes	United States	Yes	No	Computer code
Savvy System Consultants	Yes	United States	Yes	No	Computer code
Ultimate Technology, Inc.	Yes	United States	Yes	No	Computer code
Wipro Limited	Yes	United States	Yes	No	Computer code
Lasselle-Ramsay	Yes	United States	Yes	No	Documentation
Oakhill Publications/ Computer Education Consulting	Yes	United States	Yes	No	Documentation
Rick Barron	No	United States	Yes	No	Documentation

D

Certificate will be mailed in window envelope to this address:

Name ▼
Susanne S. Morales, Paralegal / Fenwick & West LLP

Number/Street/Apt ▼
2 Palo Alto Square

City/State/ZIP ▼
Palo Alto, CA 94306

YOU MUST:
• Complete all necessary spaces
• Sign your application

SEND ALL 3 ELEMENTS IN THE SAME PACKAGE:
1. Application form
2. Nonrefundable fee in check or money order payable to *Register of Copyrights*
3. Deposit Material

MAIL TO:
Library of Congress, Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000

Fees are effective through June 30, 2002 After that date, check the Copyright office Website at www.loc.gov/copyright or call (202) 707-3000 for current fee information.

November 1999—30,000   ♻ PRINTED ON RECYCLED PAPER
WEB REV: June 1999

☆U.S.GOVERNMENT PRINTING OFFICE: 2000-461-113/78

CERTIFICATE OF REGISTRATION

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

REGISTER OF COPYRIGHTS
United States of America

OFFICIAL SEAL

FORM CA
For Supplementary Registration
UNITED STATES COPYRIGHT OFFICE

REGISTRATION NUMBER

TXu 1-057-806

EFFECTIVE DATE OF SUPPLEMENTARY REGISTRATION

JAN	14	2003
Month	Day	Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

A

Title of Work ▼

Cisco IOS 12.2

Registration Number of the Basic Registration ▼	Year of Basic Registration ▼
TXu 1-036-065	2002
Name(s) of Author(s) ▼	**Name(s) of Copyright Claimant(s) ▼**
Please see Space D for list of name of authors	Cisco Technology, Inc.

B

Location and Nature of Incorrect Information in Basic Registration ▼

Line Number __2a__   Line Heading or Description __Name of Author__

Incorrect Information as It Appears in Basic Registration ▼

Cisco Systems, Inc.

Corrected Information ▼

Cisco Systems Sales & Services, Inc.

Explanation of Correction ▼

correct name of author

C

Location and Nature of Information in Basic Registration to be Amplified ▼

Line Number __2b and C__   Line Heading or Description __Name of Author__

Amplified Information and Explanation of Information ▼

Please add the following to the list of author names:

Name of Author: Cisco Technology, Inc.
Work for Hire: Yes
Domicile: United States
Anonymous: No
Pseudonymous: No
Nature of Contribution: Computer code and documentation

MORE ON BACK ▶ • Complete all applicable spaces (D-G) on the reverse side of this page.
• See detailed instructions.   • Sign the form at Space F.

DO NOT WRITE HERE
Page 1 of __2__ pages

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FORM CA

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CORRESPONDENCE ☐

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OFFICE
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ONLY

REFERENCE TO THIS REGISTRATION ADDED TO
BASIC REGISTRATION   ☒ YES   ☐ NO

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

Continuation of: ☐ Part B *or* ☐ Part C   ☑ Part A

Cisco Systems, Inc.
ABE Staffing Services, Inc.
Adecco Employment Services
Acionyx, Incorporated
Greenwood Group, dba Manpower
  Technical Services
HCL America, Inc.
HCL Consulting Limited
H.L. Yoh Company LLC
Hughes Software Systems USA
InfoSys Technologies Limited
Insight Solutions, Inc.
IT & E Corporation

Ma Foi Management Consultants Limited
Metalogic, S.A.R.L.
Metaplex, Inc.
Rapidigm
Savvy System Consultants
Ultimate Technology, Inc.
Wipro Limited
Lasselle-Ramsay
Oakhill Publications / Computer Education Consulting
Rick Barron

Correspondence: Give name and address to which correspondence about this application should be sent.
Tu T. Tsao, Esq.
Fenwick & West LLP
801 California Street
Mountain View, CA 94041

Phone (650) 335-7696   Fax (650) 938-5200   Email ttsao@fenwick.com

Deposit Account: If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.

Name _____

Account Number _____

Certification* I, the undersigned, hereby certify that I am the: (Check only one)
☐ author   ☐ owner of exclusive right(s)
☐ other copyright claimant   ☑ duly authorized agent of   Cisco Technology, Inc.
                                Name of author or other copyright claimant, or owner of exclusive right(s) ▲
of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

Typed or printed name ▼ Robert A. Barr, Worldwide Patent Counsel   Date ▼ 1-8-03

Handwritten signature (X) ▼

Certificate
will be
mailed in
window
envelope
to this
address:

Name ▼
Susanne S. Morales, Paralegal / Fenwick & West LLP

Number/Street/Apt ▼
801 California Street

City/State/ZIP ▼
Mountain View, CA 94041

YOU MUST:
• Complete all necessary spaces
• Sign your application in Space F
**SEND ALL ELEMENTS
IN THE SAME PACKAGE:**
1. Application form
2. Nonrefundable filing fee in check or
   money order payable to *Register of
   Copyrights*
MAIL TO:
Library of Congress
Copyright Office
101 Independence Avenue, S.E
Washington, D.C. 20559-6000

Fees are subject to
change. For current
fees, check the
Copyright Office
website at
www.copyright.gov,
write the Copyright
Office, or call
(202) 707-3000.

Appx50982

Certificate of Registration

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

Register of Copyrights, United States of America

FORM TX

For a Nondramatic Literary Work
UNITED STATES COPYRIGHT OFFICE

REG **TXu 1-188-975**

TXU81188975

EFFECTIVE DATE OF REGISTRATION

Month JUL Day 26 Year 04

DO NOT WRITE ABOVE THIS LINE IF YOU NEED MORE SPACE USE A SEPARATE CONTINUATION SHEET

1

TITLE OF THIS WORK ▼
Cisco IOS 12 3

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS Release 12 3 Cisco IOS Version 12 3 Cisco Internetwork Operating System 12 3 Cisco Internetwork Operating System Release 12 3 Cisco Internetwork Operating System Version 12 3

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical serial or collection, give information about the collective work in which the contribution appeared   **Title of Collective Work ▼**

If published in a periodical or serial give   **Volume ▼**   **Number ▼**   **Issue Date ▼**   **On Pages ▼**

2

a **NAME OF AUTHOR ▼**
Cisco Systems Inc

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a 'work made for hire'?
☑ Yes
☐ No

AUTHOR S NATIONALITY OR DOMICILE Name of Country
OR { Citizen of ▶
Domiciled in ▶ United States

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☑ No
Pseudonymous? ☐ Yes ☑ No
If the answer to either of these questions is "Yes see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed ▼
New and revised computer code and documentation

NOTE

Under the law the author of a work made for hire is generally the employer not the employee (see instructions) For any part of this work that was made for hire check Yes in the space provided give the employer (or other person for whom the work was prepared) as Author of that part and leave the space for dates of birth and death blank

b **NAME OF AUTHOR ▼**
See Attached Form TX/CON for Additional Authors

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a 'work made for hire'?
☐ Yes
☐ No

AUTHOR S NATIONALITY OR DOMICILE Name of Country
OR { Citizen of ▶
Domiciled in ▶

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed ▼

c **NAME OF AUTHOR ▼**

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a 'work made for hire'?
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☐ No

AUTHOR S NATIONALITY OR DOMICILE Name of Country
OR { Citizen of ▶
Domiciled in ▶

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
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Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed ▼

3

a **YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED** This information must be given ◀ Year in all cases.
2003

b **DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK** Complete this information ONLY if this work has been published   Month ▶   Day ▶   Year ▶   ◀ Nation

4

COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2 ▼
Cisco Technology Inc
170 West Tasman Drive
San Jose, CA 95134

See instructions before completing this space

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2 give a brief statement of how the claimant(s) obtained ownership of the copyright ▼
By agreement

APPLICATION RECEIVED
JUL 26 2004
ONE DEPOSIT RECEIVED
JUL 26 2004
TWO DEPOSITS RECEIVED

FUNDS RECEIVED

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MORE ON BACK ▶ Complete all applicable spaces (numbers 5 9) on the reverse side of this page
See detailed instructions   Sign the form at line 8

DO NOT WRITE HERE
Page 1 of 4 pages

Appx50983

EXAMINED BY

CHECKED BY

☐ CORRESPONDENCE
  ☐ Yes

FORM TX

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COPYRIGHT
OFFICE
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ONLY

DO NOT WRITE ABOVE THIS LINE IF YOU NEED MORE SPACE USE A SEPARATE CONTINUATION SHEET

PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office?

☑ Yes   ☐ No If your answer is Yes why is another registration being sought? (Check appropriate box) ▼

a ☐ This is the first published edition of a work previously registered in unpublished form

b ☐ This is the first application submitted by this author as copyright claimant

c ☑ This is a changed version of the work, as shown by space 6 on this application

If your answer is Yes give Previous Registration Number ▶ TXu 1 036 065   Year of Registration ▶ 2002

5

DERIVATIVE WORK OR COMPILATION
Preexisting Material Identify any preexisting work or works that this work is based on or incorporates ▼

Prior works by claimant and preexisting third party computer code

Material Added to This Work Give a brief general statement of the material that has been added to this work and in which copyright is claimed ▼

New and revised computer code and documentation

a

6

See Instructions
before completing
this space

b

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office give name and number of Account
Name ▼   Account Number ▼

Cisco Technology Inc   DA92785

a

7

CORRESPONDENCE Give name and address to which correspondence about this application should be sent   Name/Address/Apt/City/State/ZIP ▼

Jason Schroth
Cisco Technology Inc
170 West Tasman Drive
San Jose CA 95134

Area code and daytime telephone number ▶ (408) 853 7972   Fax number ▶ (408) 853 7972

Email ▶ jschroth@cisco com

b

CERTIFICATION* I the undersigned hereby certify that I am the

Check only one ▶ {
☐ author
☐ other copyright claimant
☐ owner of exclusive right(s)
☑ authorized agent of Cisco Technology, Inc
}

of the work identified in this application and that the statements made
by me in this application are correct to the best of my knowledge

Name of author or other copyright claimant, or owner of exclusive right(s) ▲

8

Typed or printed name and date ▼ If this application gives a date of publication in space 3 do not sign and submit it before that date

Robert Barr VP Intellectual Property   Date ▶ 7/21/2004

Handwritten signature (X) ▼

X

Certificate
will be
mailed in
window
envelope
to this
address

Name ▼
Jason Schroth Intellectual Property Department / Cisco Technology Inc

Number/Street/Apt ▼
170 West Tasman Drive

City/State/ZIP ▼
San Jose CA 95134

YOU MUST:
Complete all necessary spaces
Sign your application in space 8
**SEND ALL 3 ELEMENTS
IN THE SAME PACKAGE:**
1 Application form
2 Nonrefundable filing fee in check or money
  order payable to *Register of Copyrights*
3 Deposit material
MAIL TO:
Library of Congress
Copyright Office
101 Independence Avenue S E
Washington D C 20559-6000

Fees are subject to
change For current
fees, check the
Copyright Office
website at
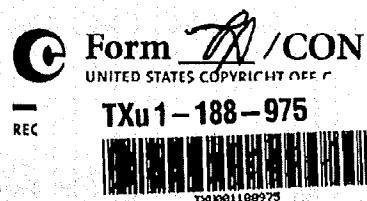www copyright gov,
write the Copyright
Office or call
(202) 707 3000

9

Rev June 2002—20 000 Web Rev June 2002   ♻ Printed on recycled paper   U S Government Printing Office 2000-461 113/20 021

CONTINUATION SHEET
FOR APPLICATION FORMS

Ⓒ Form /CON
UNITED STATES COPYRIGHT OFF C

REC **TXu 1 – 188 – 975**

TXU001188975

- This Continuation Sheet is used in conjunction with Forms CA PA SE SR TX and VA **only**
  Indicate which basic form you are continuing in the space in the upper right hand corner
- If at all possible try to fit the information called for into the spaces provided on the basic form
- If you do not have enough space for all the information you need to give on the basic form use this Continuation Sheet and submit it with the basic form
- If you submit this Continuation Sheet clip (do not tape or staple) it to the basic form and fold the two together before submitting them
- Space A of this sheet is intended to identify the basic application
  Space B is a continuation of Space 2 on the basic application
  Space B is not applicable to Short Forms
  Space C (on the reverse side of this sheet) is for the continuation of Spaces 1 4 or 6 on the basic application or for the continuation of Space 1 on any of the three Short Forms PA TX or VA

PA	PAU	SE	SEG	SEU	SR	SRU	TX	TXU	VA	VAU

EFFECTIVE DATE OF REGISTRATION

JUL 26 04

(Month)   (Day)   (Year)

CONTINUATION SHEET RECEIVED

JUL 26 2004

Page __3__ of __4__ pages

DO NOT WRITE ABOVE THIS LINE FOR COPYRIGHT OFFICE USE ONLY

A
Identification of Application

IDENTIFICATION OF CONTINUATION SHEET This sheet is a continuation of the application for copyright registration on the basic form submitted for the following work
- **TITLE** (Give the title as given under the heading Title of this Work in Space 1 of the basic form)

Cisco IOS 12 3

- **NAME(S) AND ADDRESS(ES) OF COPYRIGHT CLAIMANT(S)** (Give the name and address of at least one copyright claimant as given in Space 4 of the basic form or Space 2 of any of the Short Forms PA TX or VA)

Cisco Technology Inc   170 West Tasman Drive San Jose CA 95134

B
Continuation of Space 2

d

NAME OF AUTHOR ▼	DATES OF BIRTH AND DEATH
(See Space C)	Year Born▼ Year Died▼

Was this contribution to the work a work made for hire ?   ☐ Yes ☐ No
AUTHOR S NATIONALITY OR DOMICILE Name of Country
OR { Citizen of ▶ _____ Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is Yes see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed ▼

e

NAME OF AUTHOR ▼	DATES OF BIRTH AND DEATH
	Year Born▼ Year Died▼

Was this contribution to the work a work made for hire ?   ☐ Yes ☐ No
AUTHOR S NATIONALITY OR DOMICILE Name of Country
OR { Citizen of ▶ _____ Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is Yes see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed ▼

f

NAME OF AUTHOR ▼	DATES OF BIRTH AND DEATH
	Year Born▼ Year Died▼

Was this contribution to the work a work made for hire ?   ☐ Yes ☐ No
AUTHOR S NATIONALITY OR DOMICILE Name of Country
OR { Citizen of ▶ _____ Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is Yes see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed ▼

Use the reverse side of this sheet if you need more space for continuation of Spaces 1 4 or 6 of the basic form or for the continuation of Space 1 on any of the Short Forms PA TX or VA

Appx50985

CONTINUATION OF (Check which)   ❑ Space 1   ❑ Space 4   ❑ Space 6   ☑ Space 2b

C

Name of Author	Work For Hire	Domicile	Anonymous	Pseudo-nymous	Nature of Contribution	Continuation of other Spaces
Avnisoft Corp	Yes	United States	Yes	No	Computer Code	
Bryson Technologies Inc	Yes	United States	Yes	No	Documentation	
Cisco Technology Inc	Yes	United States	Yes	No	Computer Code & Documentation	
Data Connection Ltd	Yes	United States	Yes	No	Computer Code	
HarveyCom	Yes	United States	Yes	No	Documentation	
HCL America Inc	Yes	United States	Yes	No	Computer Code & Documentation	
HCL Consulting Limited	Yes	India	Yes	No	Computer Code	
Infosys	Yes	India	Yes	No	Documentation	
Lasselle Ramsay	Yes	United States	Yes	No	Documentation	
Oakhill Publications	Yes	United States	Yes	No	Computer Code	
ODI HCL	Yes	India	Yes	No	Documentation	
Preferred International	Yes	United Kingdom	Yes	No	Documentation	
Red Oak Technologies	Yes	United States	Yes	No	Documentation	
Richard Barron and Assoc	Yes	United States	Yes	No	Computer Code	
Tata Elxsi Limited	Yes	India	Yes	No	Computer Code	
Technology Solutions	Yes	India	Yes	No	Computer Code	
WIPRO	Yes	India	Yes	No	Computer Code	

Certificate will be mailed in window envelope to this address

Name ▼

Jason Schroth Intellectual Property Department / Cisco Technology Inc

Number/Street/Apt ▼

170 West Tasman Drive

City/State/ZIP ▼

San Jose CA 95134

D

YOU MUST:
Complete all necessary spaces
Sign your application

SEND ALL 3 ELEMENTS IN THE SAME PACKAGE:

1 Application form
2 Nonrefundable fee in check or money order payable to Register of Copyrights
3 Deposit Material

MAIL TO:
Library of Congress Copyright Office
101 Independence Avenue S E
Washington D C 20559 6000

Appx50986

Certificate of Registration

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.
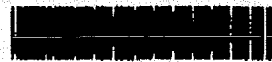
Marybeth Peters

Register of Copyrights, United States of America

FORM TX
For a Nondramatic Literary Work
UNITED STATES COPYRIGHT OFFICE

REG STR TIO   P P

TXu 1 – 259 – 162

#TXU001259162

EFFECTIVE DATE OF REGISTRATION

8	12	2005
Month	Day	Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE USE A SEPARATE CONTINUATION SHEET

1 **TITLE OF THIS WORK ▼**
Cisco IOS 12 4

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS Release 12 4 Cisco IOS Version 12 4 Cisco Internetwork Operating System 12 4 Cisco Internetwork Operating System Release 12 4 Cisco Internetwork Operating System Version 12 4

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared   **Title of Collective Work ▼**

If published in a periodical or serial give   Volume ▼   Number ▼   Issue Date ▼   On Pages ▼

2

a **NAME OF AUTHOR ▼**
Cisco Systems Inc

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a 'work made for hire'?   ☑ Yes   ☐ No

AUTHOR S NATIONALITY OR DOMICILE Name of Country
OR { Citizen of ▶ _____ } Domiciled in ▶ **United States**

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes   ☑ No
Pseudonymous?   ☐ Yes   ☑ No
If the answer to either of these questions is "Yes" see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed ▼
New and revised computer code and documentation

NOTE
Under the law the author of a work made for hire is generally the employer not the employee (see instructions) For any part of this work that was made for hire check Yes in the space provided give the employer (or other person for whom the work was prepared) as Author of that part and leave the space for dates of birth and death blank

b **NAME OF AUTHOR ▼**
See Attached Form TX/CON for Additional Authors

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a 'work made for hire'?   ☐ Yes   ☐ No

AUTHOR S NATIONALITY OR DOMICILE Name of Country
OR { Citizen of ▶ _____ } Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes   ☐ No
Pseudonymous?   ☐ Yes   ☐ No
If the answer to either of these questions is "Yes" see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed ▼

c **NAME OF AUTHOR ▼**

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a 'work made for hire'?   ☐ Yes   ☐ No

AUTHOR S NATIONALITY OR DOMICILE Name of Country
OR { Citizen of ▶ _____ } Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes   ☐ No
Pseudonymous?   ☐ Yes   ☐ No
If the answer to either of these questions is "Yes" see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed ▼

3

a **YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED**
2005   ◀ Year   This information must be given in all cases.

b **DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK**
Complete this information ONLY if this work has been published.
Month ▶ _____   Day ▶ _____   Year ▶ _____   ◀ Nation

4

COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2 ▼

Cisco Technology Inc
170 West Tasman Drive
San Jose, CA 95134

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2, give a brief statement of how the claimant(s) obtained ownership of the copyright ▼

By agreement

See instructions before completing this space

APPLICATION RECEIVED
AUG 1 2 2005
ONE DEPOSIT RECEIVED
AUG 1 2 2005
TWO DEPOSITS RECEIVED

FUNDS RECEIVED

DO NOT WRITE HERE / OFFICE USE ONLY

MORE ON BACK ▶ Complete all applicable spaces (numbers 5 9) on the reverse side of this page
See detailed instructions   Sign the form at line 8

DO NOT WRITE HERE
Page 1 of 4 pages

Appx50987

EXAMINED BY ___ Sm ___   FORM TX

CHECKED BY ___

☐ CORRESPONDENCE
   Yes

FOR
COPYRIGHT
OFFICE
USE
ONLY

DO NOT WRITE ABOVE THIS LINE IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET

5

PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office?

☑ Yes ☐ No If your answer is "Yes," why is another registration being sought? (Check appropriate box) ▼

a. ☐ This is the first published edition of a work previously registered in unpublished form

b. ☐ This is the first application submitted by this author as copyright claimant

c. ☑ This is a changed version of the work, as shown by space 6 on this application.

If your answer is Yes give **Previous Registration Number** ▶ TXu1 188 975   **Year of Registration** ▶ 2004

6

DERIVATIVE WORK OR COMPILATION
Preexisting Material Identify any preexisting work or works that this work is based on or incorporates. ▼

a

Prior works by claimant and preexisting third party computer code

Material Added to This Work Give a brief general statement of the material that has been added to this work and in which copyright is claimed ▼

b

New and revised computer code and documentation

See instructions
before completing
this space

7

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office give name and number of Account.

a

Name ▼   **Account Number** ▼

Cisco Technology Inc   DA92785

CORRESPONDENCE Give name and address to which correspondence about this application should be sent   Name/Address/Apt/City/State/ZIP ▼

b

Jason Schroth
Cisco Technology Inc
170 West Tasman Drive
San Jose CA 95134

Area code and daytime telephone number ▶ (408) 853 7972   Fax number ▶ (408) 853 7972

Email ▶ jschroth@cisco com

8

CERTIFICATION* I, the undersigned, hereby certify that I am the

Check only one ▶

☐ author
☐ other copyright claimant
☐ owner of exclusive right(s)
☑ authorized agent of Cisco Technology, Inc

Name of author or other copyright claimant, or owner of exclusive right(s) ▲

of the work identified in this application and that the statements made
by me in this application are correct to the best of my knowledge

Typed or printed name and date ▼ If this application gives a date of publication in space 3 do not sign and submit it before that date

Mallun Yen Managing Director Worldwide Intellectual Property   Date ▶ 2005 - Aug - 04

Handwritten signature (X) ▼

X _____

9

Certificate will be mailed in window envelope to this address

Name ▼
Jason Schroth Intellectual Property Department / Cisco Technology Inc

Number/Street/Apt ▼
170 West Tasman Drive

City/State/ZIP ▼
San Jose CA 95134

Complete all necessary spaces
Sign your application in space 8

1 Application form
2 Nonrefundable filing fee in check or money order payable to Register of Copyrights
3 Deposit material

Library of Congress
Copyright Office
101 Independence Avenue S E
Washington D C 20559-6000

17 U S C § 506(e) Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 409 or in any written statement filed in connection with the application shall be fined not more than $2 500

Rev June 2002—20 000 Web Rev June 2002 ♻ Printed on recycled paper   U S Government Printing Office 2000-461 113/20 021

Appx50988

CONTINUATION SHEET
FOR APPLICATION FORMS

Ⓒ Form TV /CON
UNITED STATES COPYRIGHT OFFICE

TXu 1 – 259 – 162

- This Continuation Sheet is used in conjunction with Forms CA PA SE SR TX and VA **only**
  Indicate which basic form you are continuing in the space in the upper right hand corner
- If at all possible try to fit the information called for into the spaces provided on the basic form
- If you do not have enough space for all the information you need to give on the basic form use
  this Continuation Sheet and submit it with the basic form
- If you submit this Continuation Sheet clip (do not tape or staple) it to the basic form and fold the
  two together before submitting them
- Space A of this sheet is intended to identify the basic application
  Space B is a continuation of Space 2 on the basic application
  Space B is not applicable to Short Forms
  Space C (on the reverse side of this sheet) is for the continuation of Spaces 1 4 or 6
  on the basic application or for the continuation of Space 1 on any of the three
  Short Forms PA TX or VA

| PA | PAU | SE | SEG | SEU | SR | SRU | TX | TXU | VA | VAU |

EFFECTIVE DATE OF REGISTRATION

8   12   2005
(Month)   (Day)   (Year)

CONTINUATION SHEET RECEIVED

AUG 1 2 2005

Page 3 of 4 pages

DO NOT WRITE ABOVE THIS LINE FOR COPYRIGHT OFFICE USE ONLY

A
Identification
of
Application

IDENTIFICATION OF CONTINUATION SHEET This sheet is a continuation of the application for copyright registration
on the basic form submitted for the following work

- TITLE (Give the title as given under the heading Title of this Work in Space 1 of the basic form)

  Cisco IOS 12 4

- NAME(S) AND ADDRESS(ES) OF COPYRIGHT CLAIMANT(S) (Give the name and address of at least one copyright claimant
  as given in Space 4 of the basic form or Space 2 of any of the Short Forms PA TX or VA)

  Cisco Technology Inc 170 West Tasman Drive San Jose CA 95134

B
Continuation
of Space 2

d

NAME OF AUTHOR ▼
(See Space C)

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a work made for hire ?
☐ Yes
☐ No

AUTHOR S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is Yes see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed ▼

e

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a work made for hire ?
☐ Yes
☐ No

AUTHOR S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is Yes see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed ▼

f

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a work made for hire ?
☐ Yes
☐ No

AUTHOR S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is Yes see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed ▼

*Use the reverse side of this sheet if you need more space for continuation of Spaces 1 4 or 6 of the basic form or for the
continuation of Space 1 on any of the Short Forms PA TX or VA*

Appx50989

CONTINUATION OF (Check which) ☐ Space 1 ☐ Space 4 ☐ Space 6 ☑ Space 2b

C

Name of Author	Work For Hire	Domicile	Anonymous	Pseudo-nymous	Nature of Contribution	Continuation of other Spaces
Bryson Technologies Inc	Yes	United States	Yes	No	Documentation	
Cisco Technology Inc	Yes	United States	Yes	No	Computer Code & Documentation	
Data Connection Ltd	Yes	United States	Yes	No	Computer Code	
HCL	Yes	India	Yes	No	Computer Code & Documentation	
Infosys	Yes	India	Yes	No	Computer Code	
Lasselle Ramsay	Yes	United States	Yes	No	Documentation	
Manpower	Yes	United States	Yes	No	Computer Code	
Mindtree Consulting	Yes	India	Yes	No	Computer Code	
Oak Hill Corporation	Yes	United States	Yes	No	Documentation	
Oakhill Publications	Yes	United States	Yes	No	Documentation	
PD Communications	Yes	United States	Yes	No	Documentation	
Preferred International	Yes	United Kingdom	Yes	No	Computer Code	
QSolv Inc	Yes	United States	Yes	No	Computer Code	
Red Oak Technologies	Yes	United States	Yes	No	Documentation	
Second Foundation Inc	Yes	United States	Yes	No	Computer Code	
Tata Elxsi Limited	Yes	India	Yes	No	Computer Code	
Technology Solutions	Yes	India	Yes	No	Computer Code	
Vante Inc	Yes	United States	Yes	No	Computer Code	
WIPRO	Yes	India	Yes	No	Computer Code	

Certificate will be mailed in window envelope to this address

Name ▼
Jason Schroth Intellectual Property Department / Cisco Technology Inc

Number/Street/Apt ▼
170 West Tasman Drive

City/State/ZIP ▼
San Jose CA 95134

D

Complete all necessary spaces
Sign your application

1 Application form
2 Nonrefundable fee in check or money order payable to Register of Copyrights
3 Deposit Material

Fees are subject to change. For current fees, check the Copyright Office website at www.copyright.gov write the Copyright Office or call (202) 707-3000

Library of Congress Copyright Office
101 Independence Avenue, S E
Washington, D C 20559-6000

September 2003 — 20 000 Web Rev September 2003 ♻ Printed on recycled paper

U S Government Printing Office 2003-496-605/60 034

Appx50990

Certificate of Registration

This Certificate issued under the seal of the Copyright
Office in accordance with title 17, *United States Code*,
attests that registration has been made for the work
identified below. The information on this certificate has
been made a part of the Copyright Office records.

Maria A. Pallante

Register of Copyrights, United States of America

Registration Number

TX 7-938-524

**Effective date of
registration:**

November 28, 2014

Title

Title of Work:	Cisco IOS 15.0
Previous or Alternative Title:	Cisco IOS Release 15.0
	Cisco IOS Version 15.0
	Cisco Internetwork Operating System 15.0
	Cisco Internetwork Operating System Release 15.0
	Cisco Internetwork Operating System Version 15.0
	Cisco Internetwork Operating System Software Release 15.0
	Cisco IOS Software Release 15.0

Completion/Publication

Year of Completion: 2009

Date of 1st Publication: October 1, 2009   **Nation of 1st Publication:** United States

Author

Author: Cisco Systems, Inc.

Author Created: text, computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

Author: Bard na nGleann

Author Created: text

Work made for hire: Yes

Citizen of: Ireland   **Domiciled in:** Ireland

Author: AAP3, Inc.

Author Created: computer program

Work made for hire: Yes

Citizen of: United Kingdom   **Domiciled in:** United Kingdom

Page 1 of 3

Appx50991

■   **Author:** Aerotek, Inc.

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■   **Author:** HCL Technologies Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

■   **Author:** Infobahn Softworld Inc.

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■   **Author:** Infosys Technologies Ltd.

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

■   **Author:** KForce Inc.

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■   **Author:** Ma Foi Management Consultants Ltd.

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

■   **Author:** Randstad

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■   **Author:** Wipro Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

Copyright claimant ——————————————————

Copyright Claimant:	Cisco Technology, Inc.
	170 W. Tasman Drive, San Jose, CA, 95134, United States
Transfer Statement:	By written agreement

Limitation of copyright claim

Material excluded from this claim:	Prior works by claimant and preexisting third party computer code
Previous registration and year:	TXu1-259-162 2005
New material included in claim:	New and revised computer code and accompanying documentation

Certification

Name:	Joshua L. Simmons, Esq.
Date:	November 12, 2014
Applicant's Tracking Number:	41593-0036

Appx50993

Registration #: TX0007938524

Service Request #: 1-1840007632

Kirkland & Ellis LLP
Joshua L. Simmons
601 Lexington Avenue
New York, NY 10022 United States

Appx50994

Certificate of Registration

This Certificate issued under the seal of the Copyright
Office in accordance with title 17, *United States Code*,
attests that registration has been made for the work
identified below. The information on this certificate has
been made a part of the Copyright Office records.

Maria A. Pallante

Register of Copyrights, United States of America

Registration Number

TX 7-938-525

**Effective date of
registration:**

November 28, 2014

Title

Title of Work:	Cisco IOS 15.1
Previous or Alternative Title:	Cisco IOS Release 15.1
	Cisco IOS Version 15.1
	Cisco Internetwork Operating System 15.1
	Cisco Internetwork Operating System Release 15.1
	Cisco Internetwork Operating System Version 15.1
	Cisco IOS Software Release 15.1
	Cisco Internetwork Operating System Software Release 15.1

Completion/Publication

Year of Completion: 2010

Date of 1st Publication: March 26, 2010   **Nation of 1st Publication:** United States

Author

- **Author:** Cisco Systems, Inc.

  Author Created: text, computer program

  Work made for hire: Yes

  Citizen of: United States   **Domiciled in:** United States

- **Author:** Bard na nGleann

  Author Created: text

  Work made for hire: Yes

  Citizen of: Ireland   **Domiciled in:** Ireland

- **Author:** Aerotek, Inc.

  Author Created: computer program

  Work made for hire: Yes

  Citizen of: United States   **Domiciled in:** United States

Page 1 of 3

Appx50995

- **Author:** HCL Technologies Limited

  Author Created: computer program

  Work made for hire: Yes

  Citizen of: India   **Domiciled in:** India

- **Author:** Infosys Technologies Ltd.

  Author Created: computer program

  Work made for hire: Yes

  Citizen of: India   **Domiciled in:** India

- **Author:** KForce Inc.

  Author Created: computer program

  Work made for hire: Yes

  Citizen of: United States   **Domiciled in:** United States

- **Author:** Larsen & Toubro Infotech Ltd.

  Author Created: computer program

  Work made for hire: Yes

  Citizen of: India   **Domiciled in:** India

- **Author:** Prolific Minds Inc.

  Author Created: computer program

  Work made for hire: Yes

  Citizen of: United States   **Domiciled in:** United States

- **Author:** Simplion Technologies Inc.

  Author Created: computer program

  Work made for hire: Yes

  Citizen of: United States   **Domiciled in:** United States

- **Author:** Wipro Limited

  Author Created: computer program

  Work made for hire: Yes

  Citizen of: India   **Domiciled in:** India

- **Author:** Cisco Technology, Inc.

  Author Created: text, computer program

  Work made for hire: Yes

  Citizen of: United States   **Domiciled in:** United States

Copyright claimant

Page 2 of 3

Appx50996

Copyright Claimant: Cisco Technology, Inc.

170 W. Tasman Drive, San Jose, CA, 95134, United States

Transfer Statement: By written agreement

Limitation of copyright claim

Material excluded from this claim: Prior works by claimant and preexisting third party computer code

Previous registration and year: Pending   2014

New material included in claim: New and revised computer code and accompanying documentation

Certification

Name: Joshua L. Simmons, Esq.

Date: November 12, 2014

Applicant's Tracking Number: 41593-0036

Appx50997

Registration #: TX0007938525

Service Request #: 1-1842583852

Kirkland & Ellis LLP
Joshua L. Simmons
601 Lexington Avenue
New York, NY 10022 United States

Appx50998

Certificate of Registration

This Certificate issued under the seal of the Copyright
Office in accordance with title 17, *United States Code*,
attests that registration has been made for the work
identified below. The information on this certificate has
been made a part of the Copyright Office records.

Maria A. Pallante

Register of Copyrights, United States of America

Registration Number

TX 7-937-159

**Effective date of
registration:**

November 24, 2014

Title

Title of Work: Cisco IOS 15.2

Previous or Alternative Title: Cisco IOS Release 15.2

Cisco IOS Version 15.2

Cisco Internetwork Operating System 15.2

Cisco Internetwork Operating System Release 15.2

Cisco Internetwork Operating System Version 15.2

Cisco IOS Software Release 15.2

Cisco Internetwork Operating System Software Release 15.2

Completion/Publication

Year of Completion: 2011

Date of 1st Publication: July 22, 2011   **Nation of 1st Publication:** United States

Author

■   **Author:** Cisco Systems, Inc.

Author Created: text, computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■   **Author:** Bard na nGleann

Author Created: text

Work made for hire: Yes

Citizen of: Ireland   **Domiciled in:** Ireland

■   **Author:** Aerotek, Inc.

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

Appx50999

■   **Author:** Aricent Technologies Mauritius Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: Mauritius   **Domiciled in:** Mauritius

■   **Author:** HCL Technologies Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

■   **Author:** Infosys Technologies Ltd.

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

■   **Author:** KForce Inc.

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■   **Author:** Prolific Minds Inc.

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■   **Author:** Randstad

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■   **Author:** Tata Consultancy Services Ltd.

Author Created: computer program

Work made for hire: Yes

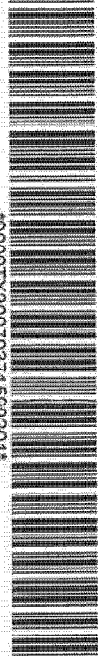**Citizen of:** India   **Domiciled in:** India

■   **Author:** Wipro Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

Appx51000

■   **Author:** Cisco Technology, Inc.

Author Created: text, computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

Copyright claimant

Copyright Claimant: Cisco Technology, Inc.

170 W. Tasman Drive, San Jose, CA, 95134, United States

Transfer Statement: By written agreement

Limitation of copyright claim

Material excluded from this claim: Prior works by claimant and preexisting third party computer code

Previous registration and year: Pending   2014

New material included in claim: New and revised computer code and accompanying documentation

Certification

Name: Joshua L. Simmons, Esq.

Date: November 12, 2014

Applicant's Tracking Number: 41593-0036

Appx51001

Registration #:   TX0007937159

Service Request #:   1-1842634112

Kirkland & Ellis LLP
Joshua L. Simmons
601 Lexington Avenue
New York, NY 10022 United States

Appx51002

Certificate of Registration
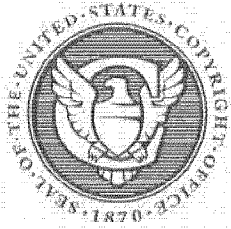
This Certificate issued under the seal of the Copyright Office in accordance with title 17, *United States Code*, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Maria A. Pallante

Register of Copyrights, United States of America

Registration Number

TX 7-938-341

Effective date of registration:

November 26, 2014

Title

Title of Work: Cisco IOS 15.4

Previous or Alternative Title: Cisco IOS Release 15.4

Cisco IOS Version 15.4

Cisco Internetwork Operating System 15.4

Cisco Internetwork Operating System Release 15.4

Cisco Internetwork Operating System Version 15.4

Cisco IOS Software Release 15.4

Cisco Internetwork Operating System Software Release 15.4

Completion/Publication

Year of Completion: 2013

Date of 1st Publication: November 24, 2013   **Nation of 1st Publication:** United States

Author

■   **Author:** Cisco Systems, Inc.

Author Created: text, computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■   **Author:** Aricent Technologies Mauritius Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: Mauritius   **Domiciled in:** Mauritius

■   **Author:** China International Intellectech Corporation

Author Created: computer program

Work made for hire: Yes

Citizen of: China   **Domiciled in:** China

Page 1 of 3

Appx51003

Author: embedUR Systems (I) Private Ltd.

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

Author: Ensoft Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: United Kingdom   **Domiciled in:** United Kingdom

Author: Gemtek Technology Co., Ltd.

Author Created: computer program

Work made for hire: Yes

Citizen of: Chinese Taipei (Taiwan)   **Domiciled in:** Chinese Taipei (Taiwan)

Author: HCL Technologies Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

Author: Infosys Technologies Ltd.

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

Author: Paxterra Solutions Inc.

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

Author: Randstad

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States
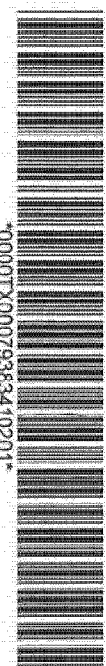
Author: Scarlet Wireless India Private Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

Appx51004

■   **Author:** Tata Consultancy Services Ltd.

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

■   **Author:** Wipro Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

Copyright claimant

Copyright Claimant: Cisco Technology, Inc.

170 W. Tasman Drive, San Jose, CA, 95134, United States

Transfer Statement: By written agreement

Limitation of copyright claim

Material excluded from this claim: Prior works by claimant and preexisting third party computer code

Previous registration and year: Pending   2014

New material included in claim: New and revised computer code and accompanying documentation
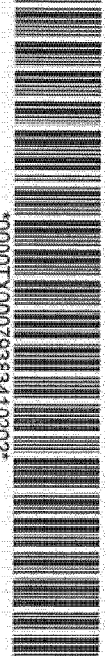
Certification

Name: Joshua L. Simmons, Esq.

Date: November 12, 2014

Applicant's Tracking Number: 41593-0036

Appx51005

Registration #:   TX0007938341

Service Request #:   1-1842848742

Kirkland & Ellis LLP
Joshua L. Simmons
Kirkland & Ellis LLP
601 Lexington Avenue
New York, NY 10022 United States

Appx51006

Certificate of Registration

This Certificate issued under the seal of the Copyright
Office in accordance with title 17, *United States Code*,
attests that registration has been made for the work
identified below. The information on this certificate has
been made a part of the Copyright Office records.

Maria A. Pallante

Register of Copyrights, United States of America

Registration Number

TX 7-937-240

**Effective date of
registration:**

November 24, 2014

Title

Title of Work:	Cisco IOS XE 2.1
Previous or Alternative Title:	Cisco IOS XE Release 2.1
	Cisco IOS XE Version 2.1
	Cisco Internetwork Operating System XE 2.1
	Cisco Internetwork Operating System XE Release 2.1
	Cisco Internetwork Operating System XE Version 2.1
	Cisco IOS XE Software Release 2.1
	Cisco Internetwork Operating System XE Software Release 2.1

Completion/Publication

Year of Completion:	2008		
Date of 1st Publication:	May 2, 2008	**Nation of 1st Publication:**	United States

Author

■ **Author:**	Cisco Systems, Inc.		
Author Created:	text, computer program		
Work made for hire:	Yes		
Citizen of:	United States	**Domiciled in:**	United States
■ **Author:**	Bard na nGleann		
Author Created:	text		
Work made for hire:	Yes		
Citizen of:	Ireland	**Domiciled in:**	Ireland
■ **Author:**	Adecco USA, Inc.		
Author Created:	computer program		
Work made for hire:	Yes		
Citizen of:	United States	**Domiciled in:**	United States

Page 1 of 3

Appx51007

■   **Author:** Aerotek, Inc.

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■   **Author:** HCL Technologies Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

■   **Author:** Infobahn Softworld Inc.

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■   **Author:** KForce Inc.

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■   **Author:** Data Connection Limited dba Metaswitch Networks

Author Created: computer program

Work made for hire: Yes

Citizen of: United Kingdom   **Domiciled in:** United Kingdom

■   **Author:** Solectron Corporation

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■   **Author:** WIPRO Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India
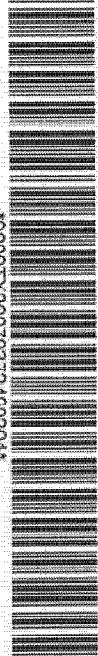
■   **Author:** Zenaide Technologies, Inc.

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

Appx51008

■   **Author:** Cisco Technology, Inc.

Author Created: text, computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

Copyright claimant

Copyright Claimant: Cisco Technology, Inc.

170 W. Tasman Drive, San Jose, CA, 95134, United States

Transfer Statement: By written agreement

Limitation of copyright claim

Material excluded from this claim: Prior works by claimant and preexisting third party computer code

New material included in claim: New and revised computer code and accompanying documentation

Certification

Name: Joshua L. Simmons, Esq.

Date: November 13, 2014

Applicant's Tracking Number: 41593-0036

Appx51009

Registration #: TX0007937240
Service Request #: 1-1863956851

Kirkland & Ellis LLP
Joshua L. Simmons
601 Lexington Avenue
New York, NY 10022 United States

Appx51010

Certificate of Registration

This Certificate issued under the seal of the Copyright Office in accordance with title 17, *United States Code*, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Maria A. Pallante

Register of Copyrights, United States of America

Registration Number

TX 7-937-234

Effective date of registration:

November 24, 2014

Title

Title of Work:	Cisco IOS XE 3.5
Previous or Alternative Title:	Cisco IOS XE Release 3.5
	Cisco IOS XE Version 3.5
	Cisco Internetwork Operating System XE 3.5
	Cisco Internetwork Operating System XE Release 3.5
	Cisco Internetwork Operating System XE Version 3.5
	Cisco IOS XE Software Release 3.5
	Cisco Internetwork Operating System XE Software Release 3.5

Completion/Publication

Year of Completion: 2011

Date of 1st Publication: November 28, 2011   **Nation of 1st Publication:** United States

Author

■   **Author:** Cisco Systems, Inc.

Author Created: text, computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■   **Author:** Bard na nGleann

Author Created: text

Work made for hire: Yes

Citizen of: Ireland   **Domiciled in:** Ireland

■   **Author:** Adecco USA, Inc.

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

Page 1 of 3

Appx51011

■ **Author:** Aerotek, Inc.

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■ **Author:** Aricent Technologies Mauritius Limted

Author Created: computer program

Work made for hire: Yes

Citizen of: Mauritius   **Domiciled in:** Mauritius

■ **Author:** HCL Technologies Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

■ **Author:** Infosys Technologies Ltd.

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

■ **Author:** KForce Inc.

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■ **Author:** Randstad

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■ **Author:** Tata Consultancy Services Ltd.

Author Created: computer program

Work made for hire: Yes

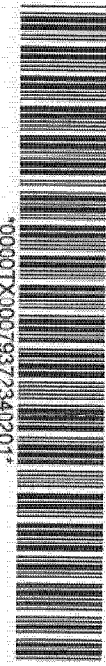**Citizen of:** India   **Domiciled in:** India

■ **Author:** Unilink Ltd.

Author Created: computer program

Work made for hire: Yes

Citizen of: Israel   **Domiciled in:** Israel

Appx51012

	Author:	Vircon, Inc.		
	Author Created:	computer program		
	Work made for hire:	Yes		
	Citizen of:	United States	Domiciled in:	United States
	Author:	WIPRO Limited		
	Author Created:	computer program		
	Work made for hire:	Yes		
	Citizen of:	India	Domiciled in:	India
	Author:	Cisco Technology, Inc.		
	Author Created:	text, computer program		
	Work made for hire:	Yes		
	Citizen of:	United States	Domiciled in:	United States

Copyright claimant

Copyright Claimant: Cisco Technology, Inc.

170 W. Tasman Drive, San Jose, CA, 95134, United States

Transfer Statement: By written agreement

Limitation of copyright claim

Material excluded from this claim: Prior works by claimant and preexisting third party computer code

Previous registration and year: Pending   2014

New material included in claim: New and revised computer code and accompanying documentation
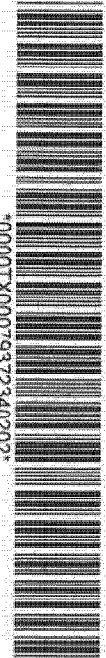
Certification

Name: Joshua L. Simmons, Esq.

Date: November 13, 2014

Applicant's Tracking Number: 41593-0036

Appx51013

Registration #: TX0007937234

Service Request #: 1-1874302659

Kirkland & Ellis LLP
Joshua L. Simmons
601 Lexington Avenue
New York, NY 10022 United States
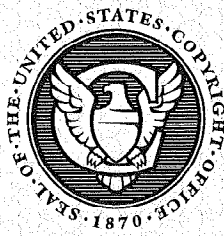
Appx51014

Certificate of Registration

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

Register of Copyrights, United States of America

FORM TX
For a Nondramatic Literary Work
UNITED STATES COPYRIGHT OFFICE

TXu 1 – 237 – 896

EFFECTIVE DATE OF REGISTRATION

04   29   2005
Month   Day   Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

1   TITLE OF THIS WORK ▼

Cisco IOS XR version 3.0

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS release 3.0; Cisco Internetwork Operating System XR version 3.0; Cisco Internetwork Operating System XR release 3.0; IOX version 3.0; IOX release 3.0; HFROS version 3.0; HFROS release 3.0; ENA version 3.0; ENA release 3.0;

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared.   **Title of Collective Work ▼**

If published in a periodical or serial give: Volume ▼   Number ▼   Issue Date ▼   On Pages ▼

2   **a**   NAME OF AUTHOR ▼

Cisco Systems, Inc.

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?   ☑ Yes   ☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR ☐ Citizen of ▶ _____
☐ Domiciled in ▶ United States

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☑ No
Pseudonymous? ☐ Yes ☑ No
If the answer to either of these questions is "Yes," see detailed instructions.

NOTE

Under the law, the "author" of a "work made for hire" is generally the employer, not the employee (see instructions). For any part of this work that was "made for hire" check "Yes" in the space provided, give the employer (or other person for whom the work was prepared) as "Author" of that part, and leave the space for dates of birth and death blank.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼
New and revised computer code and documentation.

b   NAME OF AUTHOR ▼
See Attached Form TX/CON for Additional Authors

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?   ☐ Yes   ☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR ☐ Citizen of ▶ _____
☐ Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

c   NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a "work made for hire"?   ☐ Yes   ☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR ☐ Citizen of ▶ _____
☐ Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

3   **a**   YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED This information must be given in all cases.
2004 ◀ Year

b   DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK
Complete this information ONLY if this work has been published.
Month ▶ _____ Day ▶ _____ Year ▶ _____ ◀ Nation

4   COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2. ▼

Cisco Technology, Inc.
170 West Tasman Drive
San Jose, CA 95134

See instructions before completing this space.

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2, give a brief statement of how the claimant(s) obtained ownership of the copyright. ▼

By agreement

APPLICATION RECEIVED
APR 29 2005
ONE DEPOSIT RECEIVED
APR 29 2005
TWO DEPOSITS RECEIVED

FUNDS RECEIVED

DO NOT WRITE HERE
OFFICE USE ONLY

MORE ON BACK ▶ • Complete all applicable spaces (numbers 5-9) on the reverse side of this page.
• See detailed instructions.   • Sign the form at line 8.

DO NOT WRITE HERE
Page 1 of 4 pages

Appx51015

EXAMINED BY		FORM TX
CHECKED BY		
☐ CORRESPONDENCE Yes		FOR COPYRIGHT OFFICE USE ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office?

☐ Yes ☑ No If your answer is "Yes," why is another registration being sought? (Check appropriate box.) ▼

a. ☐ This is the first published edition of a work previously registered in unpublished form.

b. ☐ This is the first application submitted by this author as copyright claimant.

c. ☐ This is a changed version of the work, as shown by space 6 on this application.

If your answer is "Yes," give: **Previous Registration Number** ▶   **Year of Registration** ▶

5

DERIVATIVE WORK OR COMPILATION

Preexisting Material Identify any preexisting work or works that this work is based on or incorporates. ▼

Prior works by claimant and preexisting third party computer code.

a

6

Material Added to This Work Give a brief, general statement of the material that has been added to this work and in which copyright is claimed. ▼

New and revised computer code and documentation

b

See instructions before completing this space.

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.

Name ▼   **Account Number** ▼

Cisco Technology, Inc.   DA92785

a

7

CORRESPONDENCE Give name and address to which correspondence about this application should be sent. Name/Address/Apt/City/State/ZIP ▼

Jason Schroth
Cisco Technology, Inc.
170 West Tasman Drive
San Jose, CA 95134

Area code and daytime telephone number ▶ (408) 853-7972   Fax number ▶ (408) 853-7972

Email ▶ jschroth@cisco.com

b

CERTIFICATION* I, the undersigned, hereby certify that I am the

Check only one ▶

☐ author
☐ other copyright claimant
☐ owner of exclusive right(s)
☑ authorized agent of Cisco Technology, Inc.

of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

Name of author or other copyright claimant, or owner of exclusive right(s) ▲

8

Typed or printed name and date ▼ If this application gives a date of publication in space 3, do not sign and submit it before that date.

Robert Barr VP Intellectual Property   Date ▶ 04/25/2005

Handwritten signature (X) ▶

X _____

Certificate will be mailed in window envelope to this address:	Name ▼ Jason Schroth, Intellectual Property Department / Cisco Technology, Inc.
	Number/Street/Apt ▼ 170 West Tasman Drive
	City/State/ZIP ▼ San Jose, CA 95134

YOU MUST:
• Complete all necessary spaces
• Sign your application in space 8

SEND ALL 3 ELEMENTS IN THE SAME PACKAGE
1. Application form
2. Nonrefundable filing fee in check or money order payable to *Register of Copyrights*
3. Deposit material

MAIL TO
Library of Congress
Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000

Fees are subject to change. For current fees, check the Copyright Office website at www.copyright.gov, write the Copyright Office, or call (202) 707-3000.

9

Rev: June 2002—20,000   Web Rev: June 2002   ♻ Printed on recycled paper   U.S. Government Printing Office: 2000-461-113/20,021

Appx51016

CONTINUATION SHEET
FOR APPLICATION FORMS

C Form ___TX___ /CON

UNITED STATES COPYRIGHT OFFICE

TXu 1 – 237 – 896

TXU001237896

PA	PAU	SE	SEG	SEU	SR	SRU	TX	TXU	VA	VAU

EFFECTIVE DATE OF REGISTRATION

04   29   2005

(Month)   (Day)   (Year)

CONTINUATION SHEET RECEIVED

APR 29 2005

Page ___3___ of ___4___ pages

- This Continuation Sheet is used in conjunction with Forms CA, PA, SE, SR, TX, and VA, only. Indicate which basic form you are continuing in the space in the upper right-hand corner.
- If at all possible, try to fit the information called for into the spaces provided on the basic form.
- If you do not have enough space for all the information you need to give on the basic form, use this Continuation Sheet and submit it with the basic form.
- If you submit this Continuation Sheet, clip (do not tape or staple) it to the basic form and fold the two together before submitting them.
- Space A of this sheet is intended to identify the basic application.
  Space B is a continuation of Space 2 on the basic application.
  Space B is not applicable to Short Forms.
  Space C (on the reverse side of this sheet) is for the continuation of Spaces 1, 4, or 6 on the basic application or for the continuation of Space 1 on any of the three Short Forms PA, TX, or VA.

DO NOT WRITE ABOVE THIS LINE. FOR COPYRIGHT OFFICE USE ONLY

A
Identification of Application

IDENTIFICATION OF CONTINUATION SHEET: This sheet is a continuation of the application for copyright registration on the basic form submitted for the following work:
- TITLE: (Give the title as given under the heading "Title of this Work" in Space 1 of the basic form.)

  Cisco IOS XR version 3.0

- NAME(S) AND ADDRESS(ES) OF COPYRIGHT CLAIMANT(S) : (Give the name and address of at least one copyright claimant as given in Space 4 of the basic form or Space 2 of any of the Short Forms PA, TX, or VA.)

  Cisco Technology, Inc., 170 West Tasman Drive, San Jose, CA 95134

B
Continuation of Space 2

d

NAME OF AUTHOR ▼

(See Space C)

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

e

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

f

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
Domiciled in ▶ _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

Use the reverse side of this sheet if you need more space for continuation of Spaces 1, 4, or 6 of the basic form or for the continuation of Space 1 on any of the Short Forms PA, TX, or VA.

Appx51017

CONTINUATION OF (Check which):   ☐ Space 1   ☐ Space 4   ☐ Space 6   ☑ Space 2b

C

Name of Author	Work For Hire	Domicile	Anonymous	Pseudo-nymous	Nature of Contribution	Continuation of other Spaces
Cisco Technology, Inc.	Yes	United States	Yes	No	Computer Code & Documentation	
Adecco/Tad Tech*	Yes	United States	Yes	No	Computer Code	
Alliance of Professionals	Yes	United States	Yes	No	Computer Code	
Americas Global	Yes	United States	Yes	No	Computer Code	
APC, Inc.	Yes	United States	Yes	No	Computer Code	
Calian Technologies	Yes	Canada	Yes	No	Documentation	
Conoscenti	Yes	Canada	Yes	No	Computer Code	
Duet Technologies	Yes	United States	Yes	No	Computer Code	
Eclipse	Yes	United States	Yes	No	Computer Code	
Ensoft Ltd	Yes	United States	Yes	No	Computer Code	
Harrington Informatics	Yes	Canada	Yes	No	Computer Code	
HCL	Yes	India	Yes	No	Computer Code	
Insight Solutions, Inc.	Yes	United States	Yes	No	Computer Code	
Introtronix International	Yes	United States	Yes	No	Computer Code	
J. Arthur Group	Yes	United States	Yes	No	Documentation	
MetaData	Yes	Canada	Yes	No	Computer Code	
Migration Software	Yes	United States	Yes	No	Computer Code	
NSA**	Yes	United States	Yes	No	Documentation	
Oakhill Publications	Yes	United States	Yes	No	Documentation	
ODI-HCL	Yes	India	Yes	No	Computer Code	
Pipelink	Yes	United States	Yes	No	Computer Code	
Pure Solutions	Yes	United States	Yes	No	Computer Code	
Rnsoft Limited	Yes	United States	Yes	No	Computer Code	
Silver	Yes	United States	Yes	No	Computer Code	
SNMP Research	Yes	United States	Yes	No	Computer Code	
SoftSol Resources	Yes	United States	Yes	No	Computer Code	
TechOne	Yes	United States	Yes	No	Computer Code	

D

Certificate will be mailed in window envelope to this address:

Name ▼
Jason Schroth, Intellectual Property Department / Cisco Technology, Inc.

Number/Street/Apt ▼
170 West Tasman Drive

City/State/ZIP ▼
San Jose, CA 95134

YOU MUST
• Complete all necessary spaces
• Sign your application

SEND ALL 3 ELEMENTS IN THE SAME PACKAGE
1. Application form
2. Nonrefundable fee in check or money order payable to Register of Copyrights
3. Deposit Material

Fees are subject to change. For current fees, check the Copyright Office website at www.copyright.gov, write the Copyright Office, or call (202) 707-3000.

MAIL TO
Library of Congress, Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000

Appx51018

Certificate of Registration

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

Register of Copyrights, United States of America

FORM TX

For a Nondramatic Literary Work
UNITED STATES COPYRIGHT OFFICE

TXu 1 – 270 – 592

TXU001270592

EFFECTIVE DATE OF REGISTRATION

10	19	05
Month	Day	Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET

1

TITLE OF THIS WORK ▼
Cisco IOS XR version 3 2

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS release 3 2 Cisco Internetwork Operating System XR version 3 2 Cisco Internetwork Operating System XR release 3 2 IOX version 3 2 IOX release 3 2 HFROS version 3 2 HFROS release 3 2 ENA version 3 2 ENA release 3 2

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical serial, or collection, give information about the collective work in which the contribution appeared   **Title of Collective Work ▼**

If published in a periodical or serial give   **Volume ▼**   **Number ▼**   **Issue Date ▼**   **On Pages ▼**

2

a **NAME OF AUTHOR ▼**
Cisco Systems Inc

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a 'work made for hire'?
☑ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE Name of Country
OR { Citizen of ▶
      Domiciled in ▶ **United States**

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☑ No
Pseudonymous? ☐ Yes ☑ No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed ▼
New and revised computer code and documentation

NOTE

Under the law, the author of a work made for hire is generally the employer not the employee (see instructions) For any part of this work that was made for hire check Yes in the space provided give the employer (or other person for whom the work was prepared) as Author of that part and leave the space for dates of birth and death blank

b **NAME OF AUTHOR ▼**
See Attached Form TX/CON for Additional Authors

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a 'work made for hire'?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE Name of Country
OR { Citizen of ▶
      Domiciled in ▶

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed ▼

c **NAME OF AUTHOR ▼**

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a 'work made for hire'?
☐ Yes
☐ No

AUTHOR'S NATIONALITY OR DOMICILE Name of Country
OR { Citizen of ▶
      Domiciled in ▶

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes," see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed ▼

3

a **YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED** This information must be given Year in all cases.
2005

b **DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK** Complete this information ONLY if this work has been published.
Month ▶ _____ Day ▶ _____ Year ▶ _____ ◀ Nation

4

See instructions before completing this space

COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2 ▼
Cisco Technology Inc
170 West Tasman Drive
San Jose, CA 95134

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2 give a brief statement of how the claimant(s) obtained ownership of the copyright ▼
By agreement

APPLICATION RECEIVED
OCT 19 2005
ONE DEPOSIT RECEIVED
OCT 19 2005
TWO DEPOSITS RECEIVED

FUNDS RECEIVED

DO NOT WRITE HERE OFFICE USE ONLY

MORE ON BACK ▶ Complete all applicable spaces (numbers 5 9) on the reverse side of this page
See detailed instructions   Sign the form at line 8

DO NOT WRITE HERE
Page 1 of ___ pages

Appx51019

EXAMINED BY

CHECKED BY

☐ CORRESPONDENCE
　 Yes

FORM TX

FOR
COPYRIGHT
OFFICE
USE
ONLY

DO NOT WRITE ABOVE THIS LINE IF YOU NEED MORE SPACE USE A SEPARATE CONTINUATION SHEET

PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office?

☑ Yes ☐ No If your answer is Yes, why is another registration being sought? (Check appropriate box) ▼

a. ☐ This is the first published edition of a work previously registered in unpublished form

b. ☐ This is the first application submitted by this author as copyright claimant

c. ☑ This is a changed version of the work, as shown by space 6 on this application

If your answer is 'Yes give **Previous Registration Number** ▶   TXu1 237 896   **Year of Registration** ▶ 2005

5

DERIVATIVE WORK OR COMPILATION
Preexisting Material Identify any preexisting work or works that this work is based on or incorporates ▼

Prior works by claimant and preexisting third party computer code

Material Added to This Work Give a brief, general statement of the material that has been added to this work and in which copyright is claimed ▼

New and revised computer code and documentation

a

b

6

See instructions
before completing
this space

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office give name and number of Account
Name ▼   **Account Number** ▼

Cisco Technology Inc   DA92785

a

7

CORRESPONDENCE Give name and address to which correspondence about this application should be sent   Name/Address/Apt/City/State/ZIP ▼

Jason Schroth
Cisco Technology Inc
170 West Tasman Drive
San Jose CA 95134

Area code and daytime telephone number ▶ (408) 853-7972   Fax number ▶ (408) 853 7972

Email ▶ jschroth@cisco com

b

CERTIFICATION* I, the undersigned, hereby certify that I am the

Check only one ▶ {
☐ author
☐ other copyright claimant
☐ owner of exclusive right(s)
☑ authorized agent of Cisco Technology, Inc

of the work identified in this application and that the statements made
by me in this application are correct to the best of my knowledge

Name of author or other copyright claimant, or owner of exclusive right(s) ▲

8

Typed or printed name and date ▼ If this application gives a date of publication in space 3 do not sign and submit it before that date

Mallun Yen Managing Director Worldwide Intellectual Property   Date ▶ 14-Oct 2005

Handwritten signature (X) ▼

X

**Certificate
will be
mailed in
window
envelope
to this
address**

Name ▼
Jason Schroth, Intellectual Property Department / Cisco Technology Inc

Number/Street/Apt ▼
170 West Tasman Drive

City/State/ZIP ▼
San Jose CA 95134

Complete all necessary spaces
Sign your application in space 8

1 Application form
2. Nonrefundable filing fee in check or money
order payable to Register of Copyrights
3. Deposit material

Library of Congress
Copyright Office
101 Independence Avenue S E
Washington D C 20559-6000

Fees are subject to
change For current
fees, check the
Copyright Office
website at
www.copyright.gov
write the Copyright
Office, or call
(202) 707-3000

9

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Appx51020

CSI-CLI-00356702

CONTINUATION SHEET
FOR APPLICATION FORMS

- This Continuation Sheet is used in conjunction with Forms CA PA SE SR TX and VA only Indicate which basic form you are continuing in the space in the upper right hand corner
- If at all possible try to fit the information called for into the spaces provided on the basic form
- If you do not have enough space for all the information you need to give on the basic form use this Continuation Sheet and submit it with the basic form
- If you submit this Continuation Sheet clip (do not tape or staple) it to the basic form and fold the two together before submitting them
- Space A of this sheet is intended to identify the basic application
  Space B is a continuation of Space 2 on the basic application
  Space B is not applicable to Short Forms
  Space C (on the reverse side of this sheet) is for the continuation of Spaces 1 4 or 6 on the basic application or for the continuation of Space 1 on any of the three Short Forms PA, TX or VA

DO NOT WRITE ABOVE THIS LINE. FOR COPYRIGHT OFFICE USE ONLY

ⓒ Form __TX__ /CON
UNITED STATES COPYRIGHT OFFICE

TXu 1 – 270 – 592

| PA | PAU | SE | SEG | SEU | SR | SRU | TX | TXU | VA | VAU |

EFFECTIVE DATE OF REGISTRATION

10   19   05
(Month)   (Day)   (Year)

CONTINUATION SHEET RECEIVED
OCT 1 9 2005

Page___3___of___7___pages

A
Identification of Application

IDENTIFICATION OF CONTINUATION SHEET This sheet is a continuation of the application for copyright registration on the basic form submitted for the following work.
- TITLE (Give the title as given under the heading Title of this Work in Space 1 of the basic form)

Cisco IOS XR version 3 2

- NAME(S) AND ADDRESS(ES) OF COPYRIGHT CLAIMANT(S) (Give the name and address of at least one copyright claimant as given in Space 4 of the basic form or Space 2 of any of the Short Forms PA, TX, or VA)

Cisco Technology Inc   170 West Tasman Drive, San Jose CA 95134

B
Continuation of Space 2

d

NAME OF AUTHOR ▼

(See Space C)

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a work made for hire ?
☐ Yes
☐ No

AUTHOR S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No

If the answer to either of these questions is Yes see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed ▼

e

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a work made for hire ?
☐ Yes
☐ No

AUTHOR S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No

If the answer to either of these questions is Yes see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed ▼

f

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a "work made for hire ?
☐ Yes
☐ No

AUTHOR S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No

If the answer to either of these questions is Yes see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed ▼

Use the reverse side of this sheet if you need more space for continuation of Spaces 1 4 or 6 of the basic form or for the continuation of Space 1 on any of the Short Forms PA TX or VA

Appx51021

CONTINUATION OF (Check which)   ☐ Space 1   ☐ Space 4   ☐ Space 6   ☑ Space 2b

C

Continuation of other Spaces

Name of Author	Work For Hire	Domicile	Anonymous	Pseudo-nymous	Nature of Contribution
Cisco Technology Inc	Yes	United States	Yes	No	Computer Code & Documentation
Calian Technologies	Yes	Canada	Yes	No	Documentation
Ensoft Ltd	Yes	United Kingdom	Yes	No	Computer Code
HCL	Yes	India	Yes	No	Computer Code
MetaData	Yes	Canada	Yes	No	Computer Code
Oak Hill Corporation	Yes	United States	Yes	No	Documentation
Rnsoft Limited	Yes	United Kingdom	Yes	No	Computer Code
SQLink	Yes	Israel	Yes	No	Computer Code
TechOne	Yes	United States	Yes	No	Computer Code

Certificate will be mailed in window envelope to this address

Name ▼

Jason Schroth Intellectual Property Department / Cisco Technology Inc

Number/Street/Apt ▼

170 West Tasman Drive

City/State/ZIP ▼

San Jose CA 95134

Complete all necessary spaces
Sign your application

1 Application form
2 Nonrefundable fee in check or money order payable to Register of Copyrights
3 Deposit Material

Library of Congress Copyright Office
101 Independence Avenue S E
Washington D C 20559-6000

Fees are subject to change For current fees check th Copyright Office website at www.copyright.gov write to th Copyright Office or call (202) 707-3000

D

Appx51022

Certificate of Registration

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

Register of Copyrights, United States of America

FORM TX
For a Nondramatic Literary Work
UNITED STATES COPYRIGHT OFFICE

REG

TXu 1 – 336 – 997

‖TXU001336997‖

EFFECTIVE DATE OF REGISTRATION

July 19, 2006
Month　　Day　　Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET

1

TITLE OF THIS WORK ▼

Cisco IOS XR version 3 3

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS XR release 3 3 Cisco Internetwork Operating System XR version 3 3 Cisco Internetwork Operating System XR release 3 3 IOX version 3 3 IOX release 3 3 IOS NG version 3 3 IOS NG release 3 3 HFROS version 3 3 HFROS release 3 3, ENA version 3 3, ENA release 3 3, Cisco Q version 3 3, Cisco Q release 3 3

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared **Title of Collective Work ▼**

If published in a periodical or serial give Volume ▼　　Number ▼　　Issue Date ▼　　On Pages ▼

2

a

NAME OF AUTHOR ▼

Cisco Systems Inc

DATES OF BIRTH AND DEATH
Year Born ▼　　Year Died ▼

Was this contribution to the work a "work made for hire"?
☑ Yes
☐ No

AUTHOR S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
{ Domiciled in ▶ United States

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☑ No
Pseudonymous? ☐ Yes ☑ No
If the answer to either of these questions is "Yes" see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed ▼
New and revised computer code and documentation

NOTE

Under the law the author of a "work made for hire" is generally the employer not the employee (see instructions) For any part of this work that was made for hire check "Yes" in the space provided give the employer (or other person for whom the work was prepared) as "Author" of that part and leave the space for dates of birth and death blank

b

NAME OF AUTHOR ▼

See Attached Form TX/CON for Additional Authors

DATES OF BIRTH AND DEATH
Year Born ▼　　Year Died ▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
{ Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes" see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed ▼

c

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born ▼　　Year Died ▼

Was this contribution to the work a "work made for hire"?
☐ Yes
☐ No

AUTHOR S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▶ _____
{ Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is "Yes" see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed ▼

3

a **YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED** This information must be given in all cases.
2006 ◀ Year

b **DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK** Complete this information ONLY if this work has been published.
Month ▶ _____ Day ▶ _____ Year ▶ _____ ◀ Nation

4

See instructions before completing this space

COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2 ▼

Cisco Technology Inc
170 West Tasman Drive
San Jose, CA 95134

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2 give a brief statement of how the claimant(s) obtained ownership of the copyright ▼

By written agreement

APPLICATION RECEIVED
JUL 19 2006
ONE DEPOSIT RECEIVED
JUL 19 2006
TWO DEPOSITS RECEIVED
FUNDS RECEIVED

DO NOT WRITE HERE OFFICE USE ONLY

MORE ON BACK ▶ Complete all applicable spaces (numbers 5 9) on the reverse side of this page
See detailed instructions Sign the form at line 8

DO NOT WRITE HERE
Page 1 of 4 pages

Appx51023

EXAMINED BY

CHECKED BY

☐ CORRESPONDENCE
   Yes

FORM TX

FOR
COPYRIGHT
OFFICE
USE
ONLY

DO NOT WRITE ABOVE THIS LINE IF YOU NEED MORE SPACE USE A SEPARATE CONTINUATION SHEET

PREVIOUS REGISTRATION Has registration for this work or for an earlier version of this work already been made in the Copyright Office?

☑ Yes   ☐ No If your answer is Yes   why is another registration being sought? (Check appropriate box) ▼

a. ☐ This is the first published edition of a work previously registered in unpublished form

b. ☐ This is the first application submitted by this author as copyright claimant

c. ☑ This is a changed version of the work, as shown by space 6 on this application

If your answer is Yes give **Previous Registration Number** ▶ TXu 1 270 592   **Year of Registration** ▶ 2005

5

DERIVATIVE WORK OR COMPILATION

Preexisting Material Identify any preexisting work or works that this work is based on or incorporates ▼

Prior works by claimant and preexisting third party computer code

Material Added to This Work Give a brief general statement of the material that has been added to this work and in which copyright is claimed ▼

New and revised computer code and documentation

6 a

b

See instructions
before completing
this space

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office give name and number of Account.

Name ▼   **Account Number** ▼

Cisco Technology Inc   DA92785

CORRESPONDENCE Give name and address to which correspondence about this application should be sent   Name / Address / Apt / City / State / ZIP ▼

Jason Schroth
Cisco Technology Inc
170 West Tasman Drive
San Jose CA 95134

Area code and daytime telephone number ▶ (408) 853 7972   Fax number ▶ (408) 853 7972

Email ▶ jschroth@cisco com

7 a

b

8

CERTIFICATION I the undersigned hereby certify that I am the

Check only one ▶ {
☐ author
☐ other copyright claimant
☐ owner of exclusive right(s)
☑ authorized agent of Cisco Technology, Inc

of the work identified in this application and that the statements made
by me in this application are correct to the best of my knowledge

Name of author or other copyright claimant or owner of exclusive right(s) ▲

Typed or printed name and date ▼ If this application gives a date of publication in space 3 do not sign and submit it before that date

Mallun Yen Managing Director Worldwide Intellectual Property   Date▶ 17 Jul 2006

Handwritten signature (X) ▼

X

**Certificate
will be
mailed in
window
envelope
to this
address**

Name ▼
Jason Schroth/Intellectual Property Department / Cisco Technology Inc

Number/Street/Apt ▼
170 West Tasman Drive

City/State/ZIP ▼
San Jose CA 95134

Complete all necessary spaces
Sign your application in space 8

1 Application form
2 Nonrefundable filing fee in check or money
  order payable to *Register of Copyrights*
3 Deposit material

Library of Congress
Copyright Office
101 Independence Avenue S E
Washington D C 20559-6000

9

Fees are subject to
change For current
fees check the
Copyright Office
website at
www.copyright.gov
write the Copyright
Office, or call
(202) 707 3000

17 U S C § 506(e) Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 409 or in any written statement filed in connection with the application shall be fined not more than $2 500

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Appx51024

CONTINUATION SHEET
FOR APPLICATION FORMS

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UNITED STATES COPYRIGHT OFFICE

REGI   **TXu 1 – 336 – 997**

| PA | PAU | SE | SEG | SEU | SR | SRU | TX | TXU | VA | VAU |

EFFECTIVE DATE OF REGISTRATION

JULY 19, 2006

(Month)   (Day)   (Year)

CONTINUATION SHEET RECEIVED

JUL 19 2006

Page __3__ of __4__ pages

- This Continuation Sheet is used in conjunction with Forms CA PA SE SR TX and VA only Indicate which basic form you are continuing in the space in the upper right hand corner
- If at all possible try to fit the information called for into the spaces provided on the basic form
- If you do not have enough space for all the information you need to give on the basic form use this Continuation Sheet and submit it with the basic form
- If you submit this Continuation Sheet clip (do not tape or staple) it to the basic form and fold the two together before submitting them
- Space A of this sheet is intended to identify the basic application
  Space B is a continuation of Space 2 on the basic application
  Space B is not applicable to Short Forms
  Space C (on the reverse side of this sheet) is for the continuation of Spaces 1 4 or 6 on the basic application or for the continuation of Space 1 on any of the three Short Forms PA TX or VA

DO NOT WRITE ABOVE THIS LINE FOR COPYRIGHT OFFICE USE ONLY

A
Identification
of
Application

IDENTIFICATION OF CONTINUATION SHEET This sheet is a continuation of the application for copyright registration on the basic form submitted for the following work
- TITLE (Give the title as given under the heading Title of this Work in Space 1 of the basic form)
  Cisco IOS XR version 3 3
- NAME(S) AND ADDRESS(ES) OF COPYRIGHT CLAIMANT(S) (Give the name and address of at least one copyright claimant as given in Space 4 of the basic form or Space 2 of any of the Short Forms PA TX or VA)
  Cisco Technology Inc   170 West Tasman Drive San Jose CA 95134

B
Continuation
of Space 2

d

NAME OF AUTHOR ▼
(See Space C)

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a work made for hire ?
❑ Yes
❑ No

AUTHOR S NATIONALITY OR DOMICILE
Name of Country
OR ⎰ Citizen of ▶ _____
⎱ Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous?   ❑ Yes ❑ No
Pseudonymous? ❑ Yes ❑ No

If the answer to either of these questions is Yes see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed ▼

---

e

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a work made for hire ?
❑ Yes
❑ No

AUTHOR S NATIONALITY OR DOMICILE
Name of Country
OR ⎰ Citizen of ▶ _____
⎱ Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous?   ❑ Yes ❑ No
Pseudonymous? ❑ Yes ❑ No

If the answer to either of these questions is Yes see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed ▼

---

f

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a work made for hire ?
❑ Yes
❑ No

AUTHOR S NATIONALITY OR DOMICILE
Name of Country
OR ⎰ Citizen of ▶ _____
⎱ Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous?   ❑ Yes ❑ No
Pseudonymous? ❑ Yes ❑ No

If the answer to either of these questions is Yes see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed ▼

Use the reverse side of this sheet if you need more space for continuation of Spaces 1 4 or 6 of the basic form or for the continuation of Space 1 on any of the Short Forms PA TX or VA

Appx51025

CONTINUATION OF (Check which)   ☐ Space 1   ☐ Space 4   ☐ Space 6   ☑ Space 2b

C
Continuation
of other
Spaces

Name of Author	Work For Hire	Domicile	Anonymous	Pseudo-nymous	Nature of Contribution
Cisco Technology Inc	Yes	United States	Yes	No	Computer Code & Documentation
Calian Technologies	Yes	Canada	Yes	No	Documentation
Data Connection Ltd	Yes	United Kingdom	Yes	No	Computer Code
Ensoft Ltd	Yes	United Kingdom	Yes	No	Computer Code
Fujitsu Japan	Yes	Japan	Yes	No	Computer Code
HCL	Yes	India	Yes	No	Computer Code
MetaData	Yes	Canada	Yes	No	Computer Code
Oak Hill Corporation	Yes	United States	Yes	No	Documentation
Pure Solutions	Yes	United States	Yes	No	Computer Code
QNX Software	Yes	United States	Yes	No	Computer Code
SQLink	Yes	Israel	Yes	No	Computer Code

Certificate will be mailed in window envelope to this address

Name ▼

Jason Schroth Intellectual Property Department / Cisco Technology Inc

Number/Street/Apt ▼

170 West Tasman Drive

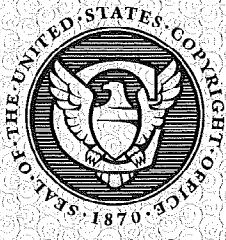City/State/ZIP ▼

San Jose CA 95134

Complete all necessary spaces
Sign your application

1 Application form
2 Nonrefundable fee in check or money order payable to Register of Copyrights
3 Deposit Material

Library of Congress Copyright Office
101 Independence Avenue S E
Washington D C 20559 6000

D

Fees are subject to change
For current fees check the Copyright Office website at www.copyright.gov write the Copyright Office or call (202) 707-3000

Appx51026

Certificate of Registration

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

Register of Copyrights, United States of America

FORM TX
For a Nondramatic Literary Work
UNITED STATES COPYRIGHT OFFICE

RE **TXu 1–344–750**

TXu001344750

EFFECTIVE DATE OF REGISTRATION

Mar 02 2007
Month   Day   Year

DO NOT WRITE ABOVE THIS LINE IF YOU NEED MORE SPACE USE A SEPARATE CONTINUATION SHEET

1

TITLE OF THIS WORK ▼

Cisco IOS XR version 3 4

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS XR release 3 4 Cisco Internetwork Operating System XR version 3 4 Cisco Internetwork Operating System XR release 3 4 IOX version 3 4 IOX release 3 4 IOS NG version 3 4 IOS NG release 3 4 HFROS version 3 4 HFROS release 3 4 ENA version 3 4 ENA release 3 4 Cisco Q version 3 4 Cisco Q release 3 4

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared   **Title of Collective Work ▼**

If published in a periodical or serial give **Volume ▼**   **Number ▼**   **Issue Date ▼**   **On Pages ▼**

2

a **NAME OF AUTHOR ▼**

Cisco Systems Inc

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a 'work made for hire ? ☑ Yes ☐ No

AUTHOR S NATIONALITY OR DOMICILE Name of Country OR { Citizen of ▶ _____ Domiciled in ▶ **United States**

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☑ No
Pseudonymous? ☐ Yes ☑ No
If the answer to either of these questions is Yes see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed ▼
New and revised computer code and documentation

b **NAME OF AUTHOR ▼**

See Attached Form TX/CON for Additional Authors

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a work made for hire ? ☐ Yes ☐ No

AUTHOR S NATIONALITY OR DOMICILE Name of Country OR { Citizen of ▶ _____ Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is Yes see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed ▼

c **NAME OF AUTHOR ▼**

DATES OF BIRTH AND DEATH
Year Born ▼   Year Died ▼

Was this contribution to the work a work made for hire ? ☐ Yes ☐ No

AUTHOR S NATIONALITY OR DOMICILE Name of Country OR { Citizen of ▶ _____ Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous? ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is Yes see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed ▼

NOTE
Under the law the author of a work made for hire is generally the employer not the employee (see Instructions) For any part of this work that was made for hire check Yes in the space provided give the employer (or other person for whom the work was prepared) as Author of that part and leave the space for dates of birth and death blank

3

a **YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED** This information must be given in all cases
2006 ◀ Year

b **DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK** Complete this information ONLY if this work has been published.
Month ▶ ___ Day ▶ ___ Year ▶ ___ ◀ Nation

4

COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2 ▼

Cisco Technology Inc
170 West Tasman Drive
San Jose, CA 95134

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2, give a brief statement of how the claimant(s) obtained ownership of the copyright ▼

By written agreement

APPLICATION RECEIVED
MAR 0 2 2007
ONE DEPOSIT RECEIVED
MAR 0 2 2007
TWO DEPOSITS RECEIVED
FUNDS RECEIVED

DO NOT WRITE HERE
OFFICE USE ONLY

MORE ON BACK ▶ Complete all applicable spaces (numbers 5 9) on the reverse side of this page
See detailed instructions   Sign the form at line 8

DO NOT WRITE HERE
Page 1 of ___ pages

EXAMINED BY _____

CHECKED BY

☐ CORRESPONDENCE
  Yes

FORM TX

FOR
COPYRIGHT
OFFICE
USE
ONLY

DO NOT WRITE ABOVE THIS LINE IF YOU NEED MORE SPACE USE A SEPARATE CONTINUATION SHEET

5

PREVIOUS REGISTRATION Has registration for this work or for an earlier version of this work already been made in the Copyright Office?
☑ Yes ☐ No If your answer is Yes why is another registration being sought? (Check appropriate box) ▶
a ☐ This is the first published edition of a work previously registered in unpublished form
b ☐ This is the first application submitted by this author a copyright claimant
c ☑ This is a changed version of the work a shown by space 6 on this application

If your answer is Yes give Previous Registration Number ▶ Pending   Year of Registration ▶ 2006

6
a

DERIVATIVE WORK OR COMPILATION
Preexisting Material Identify any preexisting work or works that this work is based on or incorporates. ▌

Prior works by claimant and preexisting third party computer code

See instructions
before completing
this space

Material Added to This Work Give a brief general statement of the material that has been added to this work and in which copyright is claimed ▌

b

New and revised computer code and documentation

7
a

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office give name and number of Account

Name ▌
Cisco Technology Inc

Account Number ▌
DA92785

b

CORRESPONDENCE Give name and address to which correspondence about this application should be sent Name/Address/Apt/City/State/ZIP ▌
Jason Schroth
Cisco Technology Inc
170 West Tasman Drive
San Jose CA 95134

Area code and daytime telephone number ▌ (408) 853 7972   Fax number ▌ (408) 853 7972

Email ▌ jschroth@cisco com

8

CERTIFICATION I the undersigned hereby certify that I am the

Check only one ▶
☐ author
☐ other copyright claimant
☐ owner of exclusive right(s)
☑ authorized agent of Cisco Technology, Inc

of the work identified in this application and that the statements made
by me in this application are correct to the best of my knowledge

Name of author or other copyright claimant, o owner of exclusi e right(s) ▌

Typed or printed name and date ▌ If this application gives a date of publication in space 3 do not sign and submit it before that date

Dan Lang Sr Corporate Counsel Worldwide Intellectual Property   Date ▌ 27 Feb 2007

Handwritten signature (X) ▌

X _____

9

Certificate
will be
mailed in
window
envelope
to this
address

Name ▌
Jason Schroth Intellectual Property Department / Cisco Technology Inc

Number/Street/Apt ▌
170 West Tasman Drive

City/State/ZIP ▌
San Jose CA 95134

Complete all necessary spaces
Sign your application in space 8

SEND ALL 3 ELEMENTS
IN THE SAME PACKAGE
1 Application form
2 Nonrefundable filing fee in check or money
  order payable to Register of Copy ghts
3 Deposit material

MAIL TO
Library of Cong ess
Copyright Office
101 Independence A enue S E
Washington D C 20559-6000

17 U S C § 506(e) Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 409 or in any written statement filed in connection with the application shall be fined not more tha $2 500

Rev June 2002—20 000   Web Rev Ju e 2002   ☻ Printed on ecycled paper   U S Gove ment P inting Office 2000-461 (113/20 021)

Appx51028

CONTINUATION SHEET
FOR APPLICATION FORMS

- This Continuation Sheet is used in conjunction with Forms CA PA SE SR TX and VA only Indicate which basic form you are continuing in the space in the upper right hand corner
- If at all possible try to fit the information called for into the spaces provided on the basic form
- If you do not have enough space for all the information you need to give on the basic form use this Continuation Sheet and submit it with the basic form
- If you submit this Continuation Sheet clip (do not tape or staple) it to the basic form and fold the two together before submitting them
- Space A of this sheet is intended to identify the basic application
  Space B is a continuation of Space 2 on the basic application
  Space B is not applicable to Short Forms
  Space C (on the reverse side of this sheet) is for the continuation of Spaces 1 4 or 6 on the basic application or for the continuation of Space 1 on any of the three Short Forms PA TX or VA

C Form ☒ /CON
UNITED STATES COPYRIGHT OFFICE

TXu 1 – 344 – 750

| PA | PAU | SE | SEG | SEU | SR | SRU | TX | TXU | VA | VAU |

EFFECTIVE DATE OF REGISTRATION

Mar 02 2007

(Month)   (Day)   (Year)

CONTINUATION SHEET RECEIVED

Mar 02 2007

Page _____ of _____ pages

DO NOT WRITE ABOVE THIS LINE FOR COPYRIGHT OFFICE USE ONLY

A
Identification of Application

IDENTIFICATION OF CONTINUATION SHEET This sheet is a continuation of the application for copyright registration on the basic form submitted for the following work
- TITLE (Give the title as given under the heading 'Title of this Work' in Space 1 of the basic form)

Cisco IOS XR version 3 4

- NAME(S) AND ADDRESS(ES) OF COPYRIGHT CLAIMANT(S) (Give the name and address of at least one copyright claimant as given in Space 4 of the basic form or Space 2 of any of the Short Forms PA TX or VA)

Cisco Technology Inc 170 West Tasman Drive San Jose CA 95134

B
Continuation of Space 2

d

NAME OF AUTHOR ▼

(See Space C)

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a work made for hire ?
☐ Yes
☐ No

AUTHOR S NATIONALITY OR DOMICILE
Name of Country
OR ⎰ Citizen of ▶ _____
   ⎱ Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is 'Yes' see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed ▼

---

e

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a work made for hire ?
☐ Yes
☐ No

AUTHOR S NATIONALITY OR DOMICILE
Name of Country
OR ⎰ Citizen of ▶ _____
   ⎱ Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is 'Yes' see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed ▼

---

f

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born▼   Year Died▼

Was this contribution to the work a work made for hire ?
☐ Yes
☐ No

AUTHOR S NATIONALITY OR DOMICILE
Name of Country
OR ⎰ Citizen of ▶ _____
   ⎱ Domiciled in ▶ _____

WAS THIS AUTHOR S CONTRIBUTION TO THE WORK
Anonymous?   ☐ Yes ☐ No
Pseudonymous? ☐ Yes ☐ No
If the answer to either of these questions is 'Yes' see detailed instructions

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed ▼

Use the reverse side of this sheet if you need more space for continuation of Spaces 1 4 or 6 of the basic form or for the continuation of Space 1 on any of the Short Forms PA TX or VA

Appx51029

CONTINUATION OF (Check which) ☐ Space 1   ☐ Space 4   ☐ Space 6   ☑ Space 2b

C
Continuation of other Spaces

Name of Author	Work For Hire	Domicile	Anonymous	Pseudo-nymous	Nature of Contribution
Cisco Technology Inc	Yes	United States	Yes	No	Computer Code & Documentation
Calian Technologies	Yes	Canada	Yes	No	Documentation
Cyber Professionals Inc	Yes	United States	Yes	No	Computer Code
Data Connection Ltd	Yes	United Kingdom	Yes	No	Computer Code
Digital X Inc	Yes	United States	Yes	No	Computer Code
Ensoft Ltd	Yes	United Kingdom	Yes	No	Computer Code
Fujitsu Japan	Yes	Japan	Yes	No	Computer Code
HCL	Yes	India	Yes	No	Computer Code
Jaypar	Yes	United States	Yes	No	Computer Code
MetaData	Yes	Canada	Yes	No	Computer Code
Oak Hill Corporation	Yes	United States	Yes	No	Documentation
ONE ANS	Yes	Italy	Yes	No	Computer Code
Piepeople Consulting Inc	Yes	United States	Yes	No	Computer Code
Pure Solutions	Yes	United States	Yes	No	Computer Code
QNX Software	Yes	United States	Yes	No	Computer Code
QSolv Inc	Yes	United States	Yes	No	Computer Code
SQLink	Yes	Israel	Yes	No	Computer Code
TechOne	Yes	United States	Yes	No	Computer Code

Certificate will be mailed in window envelope to this address

Name ▼
Jason Schroth Intellectual Property Department / Cisco Technology Inc
Number/Street/Apt ▼
170 West Tasman Drive
City/State/ZIP ▼
San Jose CA 95134

Complete all necessary spaces
Sign your application

SEND ALL 3 ELEMENTS IN THE SAME PACKAGE:
1 Application form
2 Nonrefundable fee check or money order payable to Register of Copyrights
3 Deposit Material

MAIL TO:
Library of Congress Copyright Office
101 Independence Avenue S E
Washington D C 20559-6000

D

Fees are subject to change For current fees check the Copyright Office website at www copyright gov write the Copyright Office or call (202) 707-3000

Appx51030

Certificate of Registration

This Certificate issued under the seal of the Copyright
Office in accordance with title 17, United States Code,
attests that registration has been made for the work
identified below. The information on this certificate has
been made a part of the Copyright Office records.

Marybeth Peters

Register of Copyrights, United States of America

Registration Number:

TXu 1-592-305

**Effective date of
registration:**

July 17, 2007

Title

Title of Work:	Cisco IOS XR version 3.5
Previous or Alternative Title:	Cisco IOS XR release 3.5; Cisco Internetwork Operating System version XR version 3.5; Cisco Internetwork Operating System XR release 3.5; IOX version 3.5; IOS NG version 3.5; IOS NG release 3.5; IIFROS version 3.5, HFROS release 3.5, ENA version 3.5, ENA release 3.5; Cisco Q version 3.5, Cisco Q release 3.5

Completion/Publication

Year of Completion: 2007

Author

■ **Author:**	Cisco Systems, Inc
Author Created:	New and revised computer code and documentation
Work made for hire:	Yes
Domiciled in:	United States
Anonymous:	No **Pseudonymous:** No
■ **Author:**	Abacus
Author Created:	Computer Code
Work made for hire:	Yes
Domiciled in:	United States
Anonymous:	Yes **Pseudonymous:** No
■ **Author:**	Cisco Technology, Inc
Author Created:	Computer Code & Documentation
Work made for hire:	Yes
Domiciled in:	United States
Anonymous:	Yes **Pseudonymous:** No

Appx51031

- **Author:** Cyber Professionals, Inc

  Author Created: Computer Code

  Work made for hire: Yes

  Domiciled in: United States

  Anonymous: Yes   **Pseudonymous:** No

- **Author:** Data Connection Ltd

  Author Created: Computer Code

  Work made for hire: Yes

  Domiciled in: United Kingdom

  Anonymous: Yes   **Pseudonymous:** No

- **Author:** Digital-X, Inc

  Author Created: Computer Code

  Work made for hire: Yes

  Domiciled in: United States

  Anonymous: Yes   **Pseudonymous:** No

- **Author:** Ensoft Ltd.

  Author Created: Computer Code

  Work made for hire: Yes

  Domiciled in: United Kingdom

  Anonymous: Yes   **Pseudonymous:** No

- **Author:** Fujitsu Japan

  Author Created: Computer code

  Work made for hire: Yes

  Domiciled in: Japan

  Anonymous: Yes   **Pseudonymous:** No

- **Author:** HCL

  Author Created: Computer code

  Work made for hire: Yes

  Domiciled in: India

  Anonymous: Yes   **Pseudonymous:** No

- **Author:** MetaData

  Author Created: Computer code

  Work made for hire: Yes

  Domiciled in: Canada

  Anonymous: Yes   **Pseudonymous:** No

Appx51032

■   **Author:**   ONE-ANS

Author Created: Computer code

Work made for hire: Yes

Domiciled in: Italy

Anonymous: Yes   **Pseudonymous:**   No

■   **Author:**   Pure Solutions

Author Created: Computer Code

Work made for hire: Yes

Domiciled in: United States

Anonymous: Yes   **Pseudonymous:**   No

■   **Author:**   QNX Software

Author Created: Computer Code

Work made for hire: Yes

Domiciled in: United States

Anonymous: Yes   **Pseudonymous:**   No

■   **Author:**   Sapphire InfoTech, Inc.

Author Created: Computer Code

Work made for hire: Yes

Domiciled in: United States

Anonymous: Yes   **Pseudonymous:**   No

■   **Author:**   Stivant

Author Created: Computer Code

Work made for hire: Yes

Domiciled in: United States

Anonymous: Yes   **Pseudonymous:**   No

■   **Author:**   TechOne

Author Created: Computer Code

Work made for hire: Yes

Domiciled in: United States

Anonymous: Yes   **Pseudonymous:**   No

Copyright claimant

Copyright Claimant: Cisco Technology, Inc

170 West Tasman Drive, San Jose, CA, 95134

Transfer Statement: By written agreement

Appx51033

Limitation of copyright claim

Material excluded from this claim: Prior works by claimant and preexisting third party computer code

Previously registered: Yes

Previous registration and year: TXu 1-344-750   2007

Basis of current registration: This is a changed version of the work.

New material included in claim: New and revised computer code and documentation

Certification

Name: Dan Lang

Date: July 17, 2007

Appx51034

Certificate of Registration

This Certificate issued under the seal of the Copyright
Office in accordance with title 17, *United States Code*,
attests that registration has been made for the work
identified below. The information on this certificate has
been made a part of the Copyright Office records.

Maria A. Pallante

Register of Copyrights, United States of America

Registration Number

TX 7-933-364

**Effective date of
registration:**

November 14, 2014

Title

Title of Work: Cisco IOS XR version 4.3

Previous or Alternative Title: Cisco IOS XR 4.3

Cisco IOS XR Release 4.3

Cisco IOS XR Software Release 4.3

Cisco IOS XR Software Version 4.3

Cisco Internetwork Operating System version XR version 4.3

Cisco Internetwork Operating System XR release 4.3

Completion/Publication

Year of Completion: 2012

Date of 1st Publication: December 21, 2012   **Nation of 1st Publication:** United States

Author

■   **Author:** Cisco Systems, Inc.

Author Created: text, computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■   **Author:** Bard na nGleann

Author Created: text

Work made for hire: Yes

Citizen of: Ireland   **Domiciled in:** Ireland

■   **Author:** HCL Technologies Limited

Author Created: text, computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

Page 1 of 3

Appx51035

- **Author:** Nichepro Consulting Private Limited

Author Created: text

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

- **Author:** Innovatia, Inc.

Author Created: text

Work made for hire: Yes

Citizen of: Canada   **Domiciled in:** Canada

- **Author:** Abacus Business Solutions, Inc.

Author Created: computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

- **Author:** Aricent Technologies Mauritius Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: Mauritius   **Domiciled in:** Mauritius

- **Author:** Ensoft Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: United Kingdom   **Domiciled in:** United Kingdom

- **Author:** Infosys Technologies Ltd.

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

- **Author:** Wipro Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

- **Author:** Tech Mahindra Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

Appx51036

■   **Author:**   QNX Software Systems Co.

Author Created: computer program

Work made for hire: Yes

Citizen of: Canada   **Domiciled in:**   Canada

Copyright claimant

Copyright Claimant: Cisco Technology, Inc.

170 W. Tasman Drive, San Jose, CA, 95134, United States

Transfer Statement: By written agreement

Limitation of copyright claim

Material excluded from this claim: Prior works by claimant and preexisting third party computer code

Previous registration and year: TXu1-592-305   2007

New material included in claim: New and revised computer code and accompanying documentation

Certification

Name: Joshua L. Simmons, Esq.

Date: November 12, 2014

Applicant's Tracking Number: 41593-0036

Appx51037

Registration #:   TX0007933364

Service Request #:   1-1879984622

Kirkland & Ellis LLP
Joshua L. Simmons
601 Lexington Avenue
New York, NY 10022 United States

Appx51038

Certificate of Registration

This Certificate issued under the seal of the Copyright Office in accordance with title 17, *United States Code*, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Maria A. Pallante

Register of Copyrights, United States of America

Registration Number

TX 7-933-353

Effective date of registration:

November 14, 2014

Title

Title of Work:	Cisco IOS XR version 5.2
Previous or Alternative Title:	Cisco IOS XR 5.2
	Cisco IOS XR Release 5.2
	Cisco IOS XR Software Release 5.2
	Cisco IOS XR Software Version 5.2
	Cisco Internetwork Operating System version XR version 5.2
	Cisco Internetwork Operating System XR release 5.2

Completion/Publication

Year of Completion: 2014

Date of 1st Publication: July 5, 2014   **Nation of 1st Publication:** United States

Author

- **Author:** Cisco Systems, Inc.
  Author Created: text, computer program

  Work made for hire: Yes
  Citizen of: United States   **Domiciled in:** United States

- **Author:** Bard na nGleann
  Author Created: text

  Work made for hire: Yes
  Citizen of: Ireland   **Domiciled in:** Ireland

- **Author:** HCL Technologies Limited
  Author Created: text, computer program

  Work made for hire: Yes
  Citizen of: India   **Domiciled in:** India

Page 1 of 3

Appx51039

- **Author:** Nichepro Consulting Private Limited
  Author Created: text

Work made for hire: Yes
Citizen of: India   **Domiciled in:** India

- **Author:** Innovatia, Inc.
  Author Created: text

Work made for hire: Yes
Citizen of: Canada   **Domiciled in:** Canada

- **Author:** Abacus Business Solutions, Inc.
  Author Created: computer program

Work made for hire: Yes
Citizen of: United States   **Domiciled in:** United States

- **Author:** Aricent Technologies Mauritius Limited
  Author Created: computer program

Work made for hire: Yes
Citizen of: Mauritius   **Domiciled in:** Mauritius

- **Author:** Ensoft Limited
  Author Created: computer program

Work made for hire: Yes
Citizen of: United Kingdom   **Domiciled in:** United Kingdom

- **Author:** Infosys Technologies Ltd.
  Author Created: computer program

Work made for hire: Yes
Citizen of: India   **Domiciled in:** India

- **Author:** KForce Inc
  Author Created: computer program

Work made for hire: Yes
Citizen of: United States   **Domiciled in:** United States

- **Author:** Paxterra Solutions Inc.
  Author Created: computer program

Work made for hire: Yes
Citizen of: United States   **Domiciled in:** United States

Appx51040

- **Author:** Tech Mahindra Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

- **Author:** Wipro Limited

Author Created: computer program

Work made for hire: Yes

Citizen of: India   **Domiciled in:** India

Copyright claimant

Copyright Claimant: Cisco Technology, Inc.

170 W. Tasman Drive, San Jose, CA, 95134, United States

Transfer Statement: By written agreement

Limitation of copyright claim

Material excluded from this claim: Prior works by claimant and preexisting third party computer code

Previous registration and year: Pending   2014

New material included in claim: New and revised computer code and accompanying documentation

Certification

Name: Joshua L. Simmons, Esq.

Date: November 12, 2014

Applicant's Tracking Number: 41593-0036

Appx51041

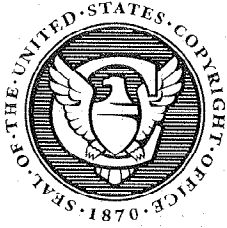**Registration #:** TX0007933353
Service Request #: 1-1879984863

Kirkland & Ellis LLP
Joshua L. Simmons
601 Lexington Avenue
New York, NY 10022 United States

Appx51042

Certificate of Registration

This Certificate issued under the seal of the Copyright
Office in accordance with title 17, *United States Code*,
attests that registration has been made for the work
identified below. The information on this certificate has
been made a part of the Copyright Office records.

Maria A. Pallante

Register of Copyrights, United States of America

Registration Number

TX 7-940-713

**Effective date of
registration:**

November 13, 2014

Title

Title of Work:	Cisco NX-OS 4.0
Previous or Alternative Title:	Cisco NX-OS Software Release 4.0
	Cisco NX-OS Release 4.0
	Cisco NXOS 4.0
	Cisco SAN-OS 4.0
	Cisco SAN-OS Software Release 4.0
	Cisco SAN-OS Release 4.0
	Cisco SANOS 4.0

Completion/Publication

Year of Completion: 2008

Date of 1st Publication: April 2, 2008   **Nation of 1st Publication:** United States

Author

■   **Author:** Cisco Systems, Inc.

Author Created: text, computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■   **Author:** Cisco Technology, Inc.

Author Created: text, computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

Copyright claimant

Copyright Claimant: Cisco Technology, Inc.

170 W. Tasman Drive, San Jose, CA, 95134, United States

Transfer Statement: By written agreement

Page 1 of 2

Appx51043

Limitation of copyright claim ────────────────────

Material excluded from this claim: previously published material and preexisting third party computer code

New material included in claim: new and revised computer code and accompanying documentation

Certification ─────────────────────────

Name: Joshua L. Simmons, Esq.

Date: November 13, 2014

Applicant's Tracking Number: 41593-0036

Correspondence: Yes

Appx51044

Registration #:   TX0007940713

Service Request #:   1-1786586481

Kirkland & Ellis LLP
Joshua L. Simmons
Kirkland & Ellis LLP
601 Lexington Avenue
New York, NY 10022 United States

Appx51046

Certificate of Registration

This Certificate issued under the seal of the Copyright
Office in accordance with title 17, *United States Code*,
attests that registration has been made for the work
identified below. The information on this certificate has
been made a part of the Copyright Office records.

Maria A. Pallante

Register of Copyrights, United States of America

Registration Number

TX 7-940-718

**Effective date of
registration:**

November 13, 2014

Title

Title of Work:	Cisco NX-OS 5.0
Previous or Alternative Title:	Cisco NX-OS Software Release 5.0
	Cisco NX-OS Release 5.0
	Cisco NXOS 5.0

Completion/Publication

Year of Completion: 2010

Date of 1st Publication: May 24, 2010   **Nation of 1st Publication:** United States

Author

■   **Author:** Cisco Systems, Inc.

Author Created: text, computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

■   **Author:** Cisco Technology, Inc.

Author Created: text, computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

Copyright claimant

Copyright Claimant: Cisco Technology, Inc.

170 W. Tasman Drive, San Jose, CA, 95134, United States

Transfer Statement: By written agreement

Limitation of copyright claim

Material excluded from this claim: previously published material and preexisting third party computer code

Previous registration and year: Pending   2014

New material included in claim: New and revised computer code and accompanying documentation

Page 1 of 2

Appx51047

Certification

Name:	Joshua L. Simmons, Esq.
Date:	November 13, 2014
Applicant's Tracking Number:	41593-0036

Correspondence:	Yes

Appx51049

Registration #: TX0007940718

Service Request #: 1-1814995944

Kirkland & Ellis LLP
Joshua L. Simmons
Kirkland & Ellis LLP
601 Lexington Avenue
New York, NY 10022 United States

Appx51050

Certificate of Registration

This Certificate issued under the seal of the Copyright
Office in accordance with title 17, *United States Code,*
attests that registration has been made for the work
identified below. The information on this certificate has
been made a part of the Copyright Office records.

Maria A. Pallante

Register of Copyrights, United States of America

Registration Number

TX 7-940-727

**Effective date of
registration:**

November 13, 2014

Title

Title of Work:	Cisco NX-OS 5.2
Previous or Alternative Title:	Cisco NX-OS Software Release 5.2
	Cisco NX-OS Release 5.2
	Cisco NXOS 5.2

Completion/Publication

Year of Completion:	2011		
Date of 1st Publication:	July 29, 2011	**Nation of 1st Publication:**	United States

Author

■ **Author:**	Cisco Systems, Inc.		
Author Created:	text, computer program		
Work made for hire:	Yes		
Citizen of:	United States	**Domiciled in:**	United States

Copyright claimant

Copyright Claimant:	Cisco Technology, Inc.
	170 W. Tasman Drive, San Jose, CA, 95134, United States
Transfer Statement:	By written agreement

Limitation of copyright claim

Material excluded from this claim:	previously published material and preexisting third party computer code
Previous registration and year:	Pending 2014
New material included in claim:	New and revised computer code and accompanying documentation

Certification

Name:	Joshua L. Simmons, Esq.
Date:	November 13, 2014
Applicant's Tracking Number:	41593-0036

Appx51051

Correspondence: Yes

Appx51052

Appx51053

Registration #: TX0007940727

Service Request #: 1-1814996028

Kirkland & Ellis LLP
Joshua L. Simmons
Kirkland & Ellis LLP
601 Lexington Avenue
New York, NY 10022 United States

Appx51054

Certificate of Registration

This Certificate issued under the seal of the Copyright Office in accordance with title 17, *United States Code*, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Maria A. Pallante

Register of Copyrights, United States of America

Registration Number

TX 7-940-722

Effective date of registration:

November 13, 2014

Title

Title of Work: Cisco NX-OS 6.2

Previous or Alternative Title: Cisco NX-OS Software Release 6.2

Cisco NX-OS Release 6.2

Cisco NXOS 6.2

Completion/Publication

Year of Completion: 2013

Date of 1st Publication: August 22, 2013   **Nation of 1st Publication:** United States

Author

- **Author:** Cisco Systems, Inc.

Author Created: text, computer program

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

- **Author:** Bard na nGleann

Author Created: text

Work made for hire: Yes

Citizen of: Ireland   **Domiciled in:** Ireland

- **Author:** Trilyon Inc.

Author Created: text

Work made for hire: Yes

Citizen of: United States   **Domiciled in:** United States

Copyright claimant

Copyright Claimant: Cisco Technology, Inc.

170 W. Tasman Drive, San Jose, CA, 95134, United States

Transfer Statement: By written agreement

Page 1 of 2

Appx51055

Limitation of copyright claim

Material excluded from this claim: previously published material and preexisting third party computer code

Previous registration and year: Pending   2014

New material included in claim: new and revised computer code and accompanying documentation

Certification

Name: Joshua L. Simmons, Esq.

Date: November 13, 2014

Applicant's Tracking Number: 41593-0036

Correspondence: Yes

Appx51056

Appx51057

Registration #: TX0007940722

Service Request #: 1-1815054342

Kirkland & Ellis LLP
Joshua L. Simmons
Kirkland & Ellis LLP
601 Lexington Avenue
New York, NY 10022 United States

Appx51058

Cisco Summary Exhibit

Modes & Prompts

Cisco Command Mode	Arista Command Mode	Cisco Prompt	Arista Prompt	Copyrighted Work(s) in Which Cisco's Command Mode and Prompt Appears	Work(s) in Which Command Mode and Prompt Appears	Exemplary Documentary Evidence Of Arista's Use of Modes And Prompts
User EXEC	EXEC	>	>	IOS 11.0 through IOS 15.4; IOS XE 2.1 through IOS XE 3.5; IOS XR 3.0 through IOS XR 5.2	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	CSI-CLI-00007473 CSI-CLI-00007244 CSI-CLI-00006858 CSI-CLI-00007841 CSI-CLI-00010517 CSI-CLI-00008985 CSI-CLI-00014141 CSI-CLI-00011973 CSI-CLI-00018146 CSI-CLI-00000084 CSI-CLI-00004616 CSI-CLI-00020575 CSI-CLI-00002332 CSI-CLI-00016001

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Appx51059

Cisco Command Mode	Arista Command Mode	Cisco Prompt	Arista Prompt	Copyrighted Work(s) in Which Cisco's Command Mode and Prompt Appears	Work(s) in Which Command Mode and Prompt Appears	Exemplary Documentary Evidence Of Arista's Use of Modes And Prompts
Privileged EXEC	Privileged EXEC	#	#	IOS 11.0 through IOS 15.4; IOS XE 2.1 through IOS XE 3.5; IOS XR 3.0 through IOS XR 5.2	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	CSI-CLI-00007473 CSI-CLI-00007244 CSI-CLI-00006858 CSI-CLI-00007841 CSI-CLI-00010517 CSI-CLI-00008985 CSI-CLI-00014141 CSI-CLI-00011973 CSI-CLI-00018146 CSI-CLI-00000084 CSI-CLI-00004616 CSI-CLI-00020575 CSI-CLI-00002332 CSI-CLI-00016001

2

Appx51060

Cisco Command Mode	Arista Command Mode	Cisco Prompt	Arista Prompt	Copyrighted Work(s) in Which Cisco's Command Mode and Prompt Appears	Work(s) in Which Command Mode and Prompt Appears	Exemplary Documentary Evidence Of Arista's Use of Modes And Prompts
Global Configuration	Global Configuration	(config)#	(config)#	IOS 11.0 through IOS 15.4; IOS XE 2.1 through IOS XE 3.5; IOS XR 3.0 through IOS XR 5.2	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.517, EOS v. 4.14.6M, EOS v. 4.15.0F	CSI-CLI-00007473 CSI-CLI-00007244 CSI-CLI-00006858 CSI-CLI-00007841 CSI-CLI-00010517 CSI-CLI-00008985 CSI-CLI-00014141 CSI-CLI-00011973 CSI-CLI-00018146 CSI-CLI-00000084 CSI-CLI-00004616 CSI-CLI-00020575 CSI-CLI-00002332 CSI-CLI-00016001

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Appx51061

Cisco Command Mode	Arista Command Mode	Cisco Prompt	Arista Prompt	Copyrighted Work(s) in Which Cisco's Command Mode and Prompt Appears	Work(s) in Which Command Mode and Prompt Appears	Exemplary Documentary Evidence Of Arista's Use of Modes And Prompts
Interface Configuration	Interface Configuration	(config-if)#	(config-if)#	IOS 11.0 through IOS 15.4; IOS XE 2.1 through IOS XE 3.5; IOS XR 3.0 through IOS XR 5.2	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	CSI-CLI-00007473 CSI-CLI-00007244 CSI-CLI-00006858 CSI-CLI-00007841 CSI-CLI-00010517 CSI-CLI-00008985 CSI-CLI-00014141 CSI-CLI-00011973 CSI-CLI-00018146 CSI-CLI-00000084 CSI-CLI-00004616 CSI-CLI-00020575 CSI-CLI-00002332 CSI-CLI-00016001

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Appx51062

Cisco Command Mode	Arista Command Mode	Cisco Prompt	Arista Prompt	Copyrighted Work(s) in Which Cisco's Command Mode and Prompt Appears	Work(s) in Which Command Mode and Prompt Appears	Exemplary Documentary Evidence Of Arista's Use of Modes And Prompts
User EXEC	EXEC	>	>	NX-OS 4.0	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	CSI-CLI-00007473 CSI-CLI-00007244 CSI-CLI-00006858 CSI-CLI-00007841 CSI-CLI-00010517 CSI-CLI-00008985 CSI-CLI-00014141 CSI-CLI-00011973 CSI-CLI-00018146 CSI-CLI-00000084 CSI-CLI-00004616 CSI-CLI-00020575 CSI-CLI-00002332 CSI-CLI-00016001

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Cisco Command Mode	Arista Command Mode	Cisco Prompt	Arista Prompt	Copyrighted Work(s) in Which Cisco's Command Mode and Prompt Appears	Work(s) in Which Command Mode and Prompt Appears	Exemplary Documentary Evidence Of Arista's Use of Modes And Prompts
Privileged EXEC	Privileged EXEC	#	#	NX-OS 4.0 through NX-OS 5.2	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	CSI-CLI-00007473 CSI-CLI-00007244 CSI-CLI-00006858 CSI-CLI-00007841 CSI-CLI-00010517 CSI-CLI-00008985 CSI-CLI-00014141 CSI-CLI-00011973 CSI-CLI-00018146 CSI-CLI-00000084 CSI-CLI-00004616 CSI-CLI-00020575 CSI-CLI-00002332 CSI-CLI-00016001

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Cisco Command Mode	Arista Command Mode	Cisco Prompt	Arista Prompt	Copyrighted Work(s) in Which Cisco's Command Mode and Prompt Appears	Work(s) in Which Command Mode and Prompt Appears	Exemplary Documentary Evidence Of Arista's Use of Modes And Prompts
EXEC	Privileged EXEC	#	#	NX-OS 5.0 through NX-OS 6.2	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	CSI-CLI-00007473 CSI-CLI-00007244 CSI-CLI-00006858 CSI-CLI-00007841 CSI-CLI-00010517 CSI-CLI-00008985 CSI-CLI-00014141 CSI-CLI-00011973 CSI-CLI-00018146 CSI-CLI-00000084 CSI-CLI-00004616 CSI-CLI-00020575 CSI-CLI-00002332 CSI-CLI-00016001

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Cisco Command Mode	Arista Command Mode	Cisco Prompt	Arista Prompt	Copyrighted Work(s) in Which Cisco's Command Mode and Prompt Appears	Work(s) in Which Command Mode and Prompt Appears	Exemplary Documentary Evidence Of Arista's Use of Modes And Prompts
Global Configuration	Global Configuration	(config)#	(config)#	NX-OS 4.0 through NX-OS 6.2	EOS v. 4.0.1 EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	CSI-CLI-00007473 CSI-CLI-00007244 CSI-CLI-00006858 CSI-CLI-00007841 CSI-CLI-00010517 CSI-CLI-00008985 CSI-CLI-00014141 CSI-CLI-00011973 CSI-CLI-00018146 CSI-CLI-00000084 CSI-CLI-00004616 CSI-CLI-00020575 CSI-CLI-00002332 CSI-CLI-00016001

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Appx51066

Cisco Command Mode	Arista Command Mode	Cisco Prompt	Arista Prompt	Copyrighted Work(s) in Which Cisco's Command Mode and Prompt Appears	Work(s) in Which Command Mode and Prompt Appears	Exemplary Documentary Evidence Of Arista's Use of Modes And Prompts
Interface Configuration	Interface Configuration	(config-if)#	(config-if)#	NX-OS 4.0 through NX-OS 6.2	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	CSI-CLI-00007473 CSI-CLI-00007244 CSI-CLI-00006858 CSI-CLI-00007841 CSI-CLI-00010517 CSI-CLI-00008985 CSI-CLI-00014141 CSI-CLI-00011973 CSI-CLI-00018146 CSI-CLI-00000084 CSI-CLI-00004616 CSI-CLI-00020575 CSI-CLI-00002332 CSI-CLI-00016001

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Appx51067

Summary Exhibit

Command Expression Analysis

	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
1.	aaa accounting		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5
2.	aaa accounting dot1x		IOS XE 3.5; NX-OS 4.0 through 6.2
3.	aaa authentication login		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5
4.	aaa authorization config- commands		Cisco IOS 11.2 through 15.4; IOS XE 3.5
5.	aaa authorization console		Cisco IOS 12.0 through 15.4; IOS XE 3.5
6.	aaa group server radius		Cisco IOS 12.0 through 15.4; IOS XR 3.2 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
7.	aaa group server tacacs+		Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
8.	address-family		Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
9.	aggregate-address		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1; NX-OS 4.0 through 6.2
10.	area default-cost	OSPFv3	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
11.	area default-cost	OSPFv2	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
12.	area nssa	OSPFv2	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
13.	area nssa	OSPFv3	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
14.	area nssa default- information-originate	OSPFv2	Cisco IOS 11.0 through 15.4; NX-OS 4.0 through 6.2

1

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
15.	area nssa default- information-originate	OSPFv3	Cisco IOS IOS 11.0 through 15.4; NX-OS 4.0 through 6.2
16.	area nssa no-summary	OSPFv2	Cisco IOS IOS 11.0 through 15.4; NX-OS 4.0 through 6.2
17.	area nssa translate type7 always	OSPFv2	Cisco IOS IOS 15.1 through 15.4; NX-OS 4.0 through 6.2
18.	area nssa translate type7 always	OSPFv3	Cisco IOS IOS 15.1 through 15.4; NX-OS 4.0 through 6.2
19.	area range	OSPFv3	Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
20.	area range	OSPFv2	Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
21.	area stub	OSPFv2	Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
22.	area stub	OSPFv3	Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
23.	arp timeout		Cisco IOS IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5
24.	banner login		Cisco IOS IOS 11.1 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5
25.	banner motd		Cisco IOS IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1; NX-OS 4.0 through 6.2
26.	bfd all-interfaces		Cisco IOS IOS 12.2 through 15.4; IOS XE 2.1 through 3.5
27.	bgp client-to-client reflection		Cisco IOS IOS 11.1 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5
28.	bgp cluster-id		Cisco IOS IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; ; IOS XE 3.5
29.	bgp confederation identifier		Cisco IOS IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; ; IOS XE 3.5
30.	bgp confederation peers		Cisco IOS IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; ; IOS XE 3.5; NX-OS 4.0 through 6.2
31.	bgp listen limit		Cisco IOS IOS 12.2 through 15.4; ; IOS XE 3.5

2

Appx51106

	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
32.	bgp log-neighbor-changes		Cisco IOS 11.1 through 15.4; IOS XR 3.0 through 3.5; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
33.	bgp redistribute-internal	BGP	Cisco IOS 12.1 through 15.4; IOS XR 3.0 through 5.2; ; IOS XE 3.5
34.	boot system		Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
35.	channel-group		Cisco IOS 11.3 through 15.4; IOS XR 4.3 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
36.	class-map type control-plane		NX-OS 4.0 through 6.2
37.	clear arp-cache		Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5
38.	clear counters		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
39.	clear ip arp		NX-OS 4.0 through 6.2
40.	clear ip bgp		Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
41.	clear ip igmp group		Cisco IOS 11.0 through 15.4; IOS XE 3.5
42.	clear ip mroute		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
43.	clear ip msdp sa-cache		Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
44.	clear ip nat translation		Cisco IOS 11.2 through 15.4; IOS XE 3.5
45.	clear ip ospf neighbor		Cisco IOS 11.1 through 15.4; NX-OS 4.0 through 6.2
46.	clear ipv6 neighbors		Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
47.	clear ipv6 ospf force-spf		Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5

3

Appx51107

	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
48.	clear lldp counters		Cisco IOS 12.2 through 15.4; IOS XR 5.2; IOS XE 3.5
49.	clear lldp table		Cisco IOS 12.2 through 15.4; IOS XR 5.2; IOS XE 3.5
50.	clear mac-address-table dynamic		Cisco IOS 12.2 through 15.0; NX-OS 4.0 through 6.2
51.	clear spanning-tree counters		NX-OS 4.0 through 6.2
52.	clock set		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
53.	clock timezone		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
54.	control-plane		Cisco IOS 12.2 through 15.4; IOS XR 3.5 through 5.2; IOS XE 2.1 through 3.5; NX-OS 6.2
55.	default-information originate	OSPFv2	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
56.	default-information originate	OSPFv3	Cisco IOS 15.1 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
57.	default-metric	OSPFv3	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1; NX-OS 4.0 through 6.2
58.	distance bgp		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5
59.	domain-id		Cisco IOS 12.1 through 15.4; IOS XR 3.3 through 5.2; IOS XE 3.5
60.	dot1x max-reauth-req		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
61.	dot1x pae authenticator		Cisco IOS 12.4 through 15.4; IOS XE 3.5; NX-OS 5.0 through 6.2
62.	dot1x port-control		Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
63.	dot1x reauthentication		Cisco IOS IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
64.	dot1x system-auth-control		Cisco IOS IOS 12.4 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
65.	dot1x timeout quiet-period		Cisco IOS IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
66.	dot1x timeout reauth-period		Cisco IOS IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
67.	dot1x timeout tx-period		Cisco IOS IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
68.	enable secret		Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
69.	erase startup-config		Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1;
70.	errdisable detect cause link- flap		Cisco IOS IOS 12.2 through 15.4
71.	errdisable recovery cause		Cisco IOS IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
72.	errdisable recovery interval		Cisco IOS IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
73.	flowcontrol receive		Cisco IOS IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
74.	flowcontrol send		Cisco IOS IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
75.	interface ethernet		IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
76.	interface loopback		Cisco IOS IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
77.	interface port-channel		Cisco IOS IOS 12.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
78.	interface vlan		Cisco IOS IOS 11.3 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
79.	ip access-group		Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
80.	ip access-list		Cisco IOS IOS 11.2 through 15.4; IOS XR 3.0 through 3.3; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
81.	ip access-list standard		Cisco IOS IOS 11.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 6.2
82.	ip address		Cisco IOS IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
83.	ip as-path access-list		Cisco IOS IOS 11.0 through 15.4; IOS XR 3.0 through 3.3; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
84.	ip community-list expanded		Cisco IOS IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
85.	ip community-list standard		Cisco IOS IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
86.	ip dhcp smart-relay		Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 5.2 through 6.2
87.	ip dhcp smart-relay global		IOS XE 3.5; NX-OS 5.2 through 6.2
88.	ip dhcp snooping		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
89.	ip dhcp snooping information option		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
90.	ip dhcp snooping vlan		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
91.	ip domain lookup		Cisco IOS 11.0 through 15.4; IOS XR 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
92.	ip domain name		Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
93.	ip extcommunity-list expanded		Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 5.0 through 6.2
94.	ip extcommunity-list standard		Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 5.0 through 6.2
95.	ip helper-address		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5
96.	ip host		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
97.	ip http client source-interface		Cisco IOS 12.4 through 15.4; IOS XE 2.1 through 3.5
98.	ip icmp redirect		Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5
99.	ip igmp last-member-query- count		Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
100.	ip igmp last-member-query- interval		Cisco IOS 12.1 through 15.4; IOS XE 3.5
101.	ip igmp query-interval		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
102.	ip igmp query-max-response- time		Cisco IOS 11.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
103.	ip igmp snooping		Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
104.	ip igmp snooping querier		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
105.	ip igmp snooping vlan		Cisco IOS 12.0 through 15.4; IOS XE 3.5
106.	ip igmp snooping vlan immediate-leave		Cisco IOS 12.0 through 15.4; IOS XE 3.5
107.	ip igmp snooping vlan mrouter		Cisco IOS 12.0 through 15.4; IOS XE 3.5
108.	ip igmp snooping vlan static		Cisco IOS 12.0 through 15.4; IOS XE 3.5
109.	ip igmp startup-query- interval		NX-OS 4.0 through 6.2
110.	ip igmp startup-query-count		NX-OS 4.0 through 6.2
111.	ip igmp static-group		Cisco IOS 11.2 through 15.4; IOS XE 3.5
112.	ip igmp version		Cisco IOS 11.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
113.	ip load-sharing		Cisco IOS 11.2 through 15.4; IOS XE 2.1 through 3.5
114.	ip local-proxy-arp		Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
115.	ip msdp cache-sa-state		Cisco IOS 12.0 through 15.4; IOS XE 3.5

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
116.	ip msdp default-peer		Cisco IOS 12.0 through 15.4; IOS XE 3.5
117.	ip msdp description		Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
118.	ip msdp group-limit		NX-OS 4.0 through 6.2
119.	ip msdp keepalive		Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
120.	ip msdp mesh-group		Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
121.	ip msdp originator-id		Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
122.	ip msdp peer		Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
123.	ip msdp sa-filter in		Cisco IOS 12.0 through 15.4; IOS XE 3.5
124.	ip msdp sa-filter out		Cisco IOS 12.0 through 15.4; IOS XE 3.5;
125.	ip msdp sa-limit		Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
126.	ip msdp shutdown		Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
127.	ip msdp timer		Cisco IOS 12.1 through 15.4; IOS XE 3.5
128.	ip multicast boundary		Cisco IOS 11.1 through 15.4; IOS XE 3.5
129.	ip multicast-routing		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5
130.	ip name-server		Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
131.	ip nat pool		Cisco IOS 11.2 through 15.4; IOS XE 3.5
132.	ip nat translation tcp-timeout		Cisco IOS 11.2 through 15.4; IOS XE 3.5
133.	ip nat translation udp-timeout		Cisco IOS 11.2 through 15.4; IOS XE 3.5
134.	ip ospf authentication		Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
135.	ip ospf authentication-key		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
136.	ip ospf bfd		Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2
137.	ip ospf cost		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 3.3; IOS XE 3.5; NX-OS 4.0 through 6.2
138.	ip ospf dead-interval		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
139.	ip ospf hello-interval		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
140.	ip ospf message-digest-key		Cisco IOS 11.0 through 15.4; IOS XR 3.0; IOS XE 3.5; NX-OS 4.0 through 6.2
141.	ip ospf name-lookup		Cisco IOS 11.0 through 15.4; IOS XE 3.5
142.	ip ospf network		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
143.	ip ospf priority		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
144.	ip ospf retransmit-interval		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
145.	ip ospf shutdown		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
146.	ip ospf transmit-delay		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
147.	ip pim anycast-rp		NX-OS 4.0 through 6.2
148.	ip pim bfd		Cisco IOS 15.4; NX-OS 5.0 through 6.2
149.	ip pim bfd-instance		NX-OS 5.0 through 6.2
150.	ip pim bsr-border		Cisco IOS 11.3 through 15.4; IOS XE 3.5
151.	ip pim bsr-candidate		Cisco IOS 11.3 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
152.	ip pim dr-priority		Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
153.	ip pim log-neighbor-changes		Cisco IOS IOS 12.4 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
154.	ip pim neighbor-filter		Cisco IOS IOS 11.3 through 15.4; IOS XE 3.5
155.	ip pim query-interval		Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1 through 3.5;
156.	ip pim register-source		Cisco IOS IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 6.2
157.	ip pim rp-address		Cisco IOS IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
158.	ip pim rp-candidate		Cisco IOS IOS 11.3 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
159.	ip pim sparse-mode		Cisco IOS IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
160.	ip pim spt-threshold		Cisco IOS IOS 11.1 through 15.4; IOS XR 3.0; IOS XE 3.5
161.	ip pim spt-threshold group-list		Cisco IOS IOS 11.1 through 15.4
162.	ip pim ssm range		Cisco IOS IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
163.	ip prefix-list		Cisco IOS IOS 12.0 through 15.4; IOS XR 3.0 through 3.3; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
164.	ip protocol		Cisco IOS IOS 12.0 through 15.4
165.	ip proxy-arp		Cisco IOS IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
166.	ip radius source-interface		Cisco IOS IOS 11.3 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2
167.	ip rip v2-broadcast		Cisco IOS IOS 12.1 through 15.4; IOS XE 3.5
168.	ip route		Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
169.	ip routing		Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
170.	ip tacacs source-interface		Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2
171.	ipv6 access-list		Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2
172.	ipv6 address		Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
173.	ipv6 dhcp relay destination		Cisco IOS 12.4 through 15.4; IOS XE 2.1 through 3.5
174.	ipv6 enable		Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5
175.	ipv6 host		Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2
176.	ipv6 access-group		Cisco IOS 12.4 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5
177.	ipv6 nd managed-config-flag		Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
178.	ipv6 nd ns-interval		Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
179.	ipv6 nd other-config-flag		Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
180.	ipv6 nd prefix		Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 5.2 through 6.2
181.	ipv6 nd ra interval		Cisco IOS 12.4 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
182.	ipv6 nd ra lifetime		Cisco IOS 12.4 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
183.	ipv6 nd ra suppress		Cisco IOS 12.4 through 15.4; IOS XE 2.1 through 3.5

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
184.	ipv6 nd reachable-time		Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
185.	ipv6 nd router-preference		Cisco IOS 12.4 through 15.4; IOS XE 2.1 through 3.5
186.	ipv6 neighbor		Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
187.	ipv6 ospf area		Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5
188.	ipv6 ospf cost		Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5
189.	ipv6 ospf dead-interval		Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5
190.	ipv6 ospf hello-interval		Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5
191.	ipv6 ospf network		Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5
192.	ipv6 ospf priority		Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5
193.	ipv6 ospf retransmit-interval		Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5
194.	ipv6 ospf transmit-delay		Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5
195.	ipv6 prefix-list		Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
196.	ipv6 route		Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
197.	ipv6 router ospf		Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5
198.	ipv6 unicast-routing		Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 6.2
199.	isis hello-interval		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
200.	isis hello-multiplier		Cisco IOS IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
201.	isis lsp-interval		Cisco IOS IOS 11.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
202.	isis metric		Cisco IOS IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
203.	isis passive		NX-OS 4.0 through 6.2
204.	isis passive interface	IS-IS	NX-OS 6.2
205.	isis priority		Cisco IOS IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
206.	is-type		Cisco IOS IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
207.	lacp port-priority		Cisco IOS IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
208.	lacp rate		Cisco IOS IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 5.2 through 6.2
209.	lacp system-priority		Cisco IOS IOS 12.1 through 15.4; IOS XR 4.3 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
210.	link state group		Cisco IOS IOS 15.1 through 15.4; IOS XE 3.5
211.	link state track		Cisco IOS IOS 15.1 through 15.4; IOS XE 3.5
212.	lldp holdtime		Cisco IOS IOS 12.2 through 15.4; IOS XR 5.2; IOS XE 3.5; NX-OS 5.0 through 6.2
213.	lldp receive		Cisco IOS IOS 12.2 through 15.4; NX-OS 5.0 through 6.2
214.	lldp reinit		Cisco IOS IOS 12.2 through 15.4; IOS XR 5.2; NX-OS 5.0 through 6.2
215.	lldp run		Cisco IOS IOS 12.2 through 15.4
216.	lldp timer		Cisco IOS IOS 12.2 through 15.4; IOS XR 5.2; IOS XE 3.5; NX-OS 5.0 through 6.2
217.	lldp tlv-select		Cisco IOS IOS 12.2 through 15.4; IOS XR 5.2; NX-OS 5.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
218.	lldp transmit		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 5.0 through 6.2
219.	load interval		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 5.2 through 6.2
220.	log-adjacency-changes	OSPFv2	Cisco IOS 12.1 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 5.2
221.	log-adjacency-changes	IS-IS	IOS XR 3.0 through 5.2; NX-OS 4.0 through 6.2
222.	log-adjacency-changes	OSPFv3	Cisco IOS 15.1 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
223.	logging host		Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5
224.	mac access-group		Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
225.	mac access-list		NX-OS 4.0 through 6.2
226.	mac address-table aging-time		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
227.	mac address-table static		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
228.	mac-address		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 6.2
229.	maximum-paths	OSPF	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
230.	maximum-paths	OSPFv3	Cisco IOS 15.1 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
231.	neighbor activate		Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5
232.	neighbor allowas-in		Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
233.	neighbor default-originate		Cisco IOS 11.0 through 15.4; IOS XE 3.5
234.	neighbor description		Cisco IOS 11.3 through 15.4; IOS XE 3.5
235.	neighbor ebgp-multihop		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0
236.	neighbor fall-over bfd		Cisco IOS 12.2 through 15.4; IOS XE 3.5
237.	neighbor local-as		Cisco IOS 12.0 through 15.4; IOS XE 3.5
238.	neighbor next-hop-self		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
239.	neighbor password		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5
240.	neighbor peer-group	assigning members (C) / neighbor assignment (A)	Cisco IOS 11.0 through 15.4; IOS XE 3.5
241.	neighbor peer-group	creating (C) / create (A)	Cisco IOS 11.0 through 15.4; IOS XE 3.5
242.	neighbor remote-as		Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
243.	neighbor remove-private-as		Cisco IOS 11.0 through 15.4; IOS XE 3.5

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
244.	neighbor route-map	BGP	Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2
245.	neighbor route-reflector- client		Cisco IOS IOS 11.1 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
246.	neighbor send-community		Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0
247.	neighbor shutdown		Cisco IOS IOS 12.0 through 15.4; IOS XE 2.1 through 3.5
248.	neighbor soft-reconfiguration		Cisco IOS IOS 11.2 through 15.4; IOS XE 3.5
249.	neighbor timers		Cisco IOS IOS 12.0 through 15.4; IOS XE 3.5
250.	neighbor transport connection-mode		Cisco IOS IOS 12.4 through 15.4
251.	neighbor update-source		Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0
252.	neighbor weight		Cisco IOS IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
253.	network area	OSPFv2	Cisco IOS IOS 11.0 through 15.4; IOS XR 3.0; IOS XE 3.5
254.	no snmp-server		Cisco IOS IOS 11.0 through 15.4; IOS XR 5.2; IOS XE 2.1 through 3.5
255.	ntp authenticate		Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2
256.	ntp authentication-key		Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2
257.	ntp server		Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2
258.	ntp source		Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
259.	ntp trusted-key		Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2
260.	passive-interface	OSPFv2	Cisco IOS IOS 11.0 through 15.4; NX-OS 5.2 through 6.2
261.	passive-interface	OSPFv3	Cisco IOS IOS 15.1 through 15.4; IOS XE 3.5
262.	passive-interface default	OSPFv2	Cisco IOS IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
263.	policy-map type control- plane		NX-OS 4.0 through 6.2
264.	policy-map type qos		IOS XR 5.2; NX-OS 4.0 through 6.2
265.	port-channel load-balance		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 5.2 through 6.2
266.	port-channel min-links		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 6.2
267.	ptp priority1	PTP	Cisco IOS 15.0 through 15.4; IOS XR 4.3 through 5.2; IOS XE 3.5; NX-OS 5.2 through 6.2
268.	ptp priority2	PTP	Cisco IOS 15.0 through 15.4; IOS XR 4.3 through 5.2; IOS XE 3.5; NX-OS 5.2 through 6.2
269.	priority-flow-control mode		NX-OS 5.2 through 6.2
270.	private-vlan		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
271.	private-vlan mapping		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
272.	ptp domain		NX-OS 5.2 through 6.2
273.	ptp sync interval		NX-OS 5.2 through 6.2
274.	radius-server deadtime		Cisco IOS 11.1 through 15.4; IOS XR 3.3 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
275.	radius-server host		Cisco IOS 11.1 through 15.4; IOS XR 4.3 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
276.	radius-server key		Cisco IOS 11.1 through 15.4; IOS XR 3.2 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
277.	radius-server retransmit		Cisco IOS 11.1 through 15.4; IOS XR 3.2 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
278.	radius-server timeout		Cisco IOS 11.1 through 15.4; IOS XR 3.2 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
279.	redundancy force-switchover		Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5
280.	route-map		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 3.3; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
281.	router bgp		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
282.	router isis		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
283.	router ospf		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
284.	router rip		Cisco IOS 11.0 through 15.4; IOS XR 3.3 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
285.	router-id	OSPFv2	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
286.	router-id	OSPFv3	Cisco IOS 15.1 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
287.	routing-context vrf		Cisco IOS 15.4; IOS XE 3.5; NX- OS 4.0 through 6.2
288.	service sequence-numbers		Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5
289.	set-overload-bit		Cisco IOS 11.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
290.	show aaa method-lists		Cisco IOS 12.2 through 15.4; IOS XE 3.5

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
291.	show aaa sessions		Cisco IOS 15.2 through 15.4; IOS XE 3.5
292.	show arp		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
293.	show bfd neighbors		Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 6.2
294.	show clock		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
295.	show dot1q-tunnel		Cisco IOS 12.2 through 15.4; NX-OS 5.0 through 6.2
296.	show dot1x		Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
297.	show dot1x all summary		Cisco IOS 12.1 through 15.4; NX-OS 4.0 through 6.2
298.	show dot1x statistics		Cisco IOS 12.2 through 15.4; IOS XE 3.5
299.	show environment all		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1
300.	show environment cooling		Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5
301.	show environment power		IOS XR 3.0 through 5.2; NX-OS 5.0 through 6.2
302.	show environment temperature		Cisco IOS 11.2 through 12.1; IOS XR 3.0 through 5.2; IOS XE 2.1
303.	show etherchannel		Cisco IOS 12.0 through 15.4; IOS XE 3.5
304.	show hostname		NX-OS 4.0 through 6.2
305.	show hosts		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
306.	show interfaces		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
307.	show interfaces capabilities		Cisco IOS IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
308.	show interfaces description		Cisco IOS IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 6.2
309.	show interfaces flowcontrol		IOS 12.2 through 15.4; IOS XE 3.5
310.	show interfaces private-vlan mapping		Cisco IOS IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 6.2
311.	show interfaces status		Cisco IOS IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 6.2
312.	show interfaces switchport		Cisco IOS IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 6.2
313.	show interfaces switchport backup		Cisco IOS IOS 12.2 through 15.4; IOS XE 3.5
314.	show interfaces transceiver		Cisco IOS IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 6.2
315.	show interfaces trunk		Cisco IOS IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 6.2
316.	show inventory		Cisco IOS IOS 12.4 through 15.4; IOS XR 3.3 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
317.	show ip access-lists		Cisco IOS IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
318.	show ip arp		Cisco IOS IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
319.	show ip bgp		Cisco IOS IOS 11.0 through 15.4; IOS XR 3.0 through 3.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
320.	show ip bgp community		Cisco IOS IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
321.	show ip bgp neighbors	route type	Cisco IOS IOS 11.0 through 15.4; IOS XE 3.5
322.	show ip bgp neighbors		Cisco IOS IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
323.	show ip bgp paths		Cisco IOS IOS 11.0 through 15.4; IOS XE 3.5
324.	show ip bgp peer-group		Cisco IOS IOS 11.0 through 15.4; IOS XE 3.5

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
325.	show ip bgp regexp		Cisco IOS 11.0 through 15.4; IOS XE 3.5
326.	show ip bgp summary		Cisco IOS 11.0 through 15.4; IOS XE 3.5
327.	show ip community-list		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
328.	show ip dhcp snooping		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
329.	show ip extcommunity-list		Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 6.2
330.	show ip helper-address		Cisco IOS 12.4 through 15.4; IOS XE 3.5
331.	show ip igmp groups		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
332.	show ip igmp interface		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
333.	show ip igmp snooping		Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
334.	show ip igmp snooping groups		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
335.	show ip igmp snooping mrouter		Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
336.	show ip igmp snooping querier		Cisco IOS 12.4 through 15.4; NX-OS 4.0 through 6.2
337.	show ip interface		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
338.	show ip interface brief		Cisco IOS 12.4 through 15.4; IOS XR 3.4 through 5.2; IOS XE 3.5
339.	show ip mfib		Cisco IOS 15.0 through 15.4; IOS XE 2.1 through 3.5
340.	show ip mroute		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
341.	show ip mroute count		Cisco IOS 11.0 through 15.4; IOS XE 3.5
342.	show ip msdp mesh-group		NX-OS 4.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
343.	show ip msdp peer		Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
344.	show ip msdp rpf-peer		Cisco IOS 12.4 through 15.4; IOS XE 3.5
345.	show ip msdp sa-cache		Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
346.	show ip msdp summary		Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
347.	show ip nat translations		Cisco IOS 11.2 through 15.4; IOS XE 3.5
348.	show ip ospf		Cisco IOS 11.0 through 15.4; IOS XR 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
349.	show ip ospf border-routers		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
350.	show ip ospf database database-summary		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
351.	show ip ospf interface		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
352.	show ip ospf neighbor		Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
353.	show ip ospf request-list		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
354.	show ip ospf retransmission- list		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
355.	show ip pim interface		Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
356.	show ip pim neighbor		Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
357.	show ip pim rp		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
358.	show ip pim rp-hash		Cisco IOS 11.3 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
359.	show ip prefix-list		Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
360.	show ip rip database		Cisco IOS 12.0 through 15.4; IOS XE 3.5

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
361.	show ip rip neighbors		Cisco IOS 15.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
362.	show ip route		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
363.	show ip route summary		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
364.	show ip route tag		Cisco IOS 15.2 through 15.4
365.	show ipv6 access-list		Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2
366.	show ipv6 bgp		NX-OS 4.0 through 6.2
367.	show ipv6 bgp community		Cisco IOS 12.2; NX-OS 4.0 through 6.2
368.	show ipv6 bgp neighbors		NX-OS 4.0 through 6.2
369.	show ipv6 bgp summary		NX-OS 4.0 through 6.2
370.	show ipv6 interface		Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
371.	show ipv6 neighbors		Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
372.	show ipv6 ospf		Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5
373.	show ipv6 ospf border- routers		Cisco IOS 12.2; IOS XE 2.1 through 3.5
374.	show ipv6 ospf interface		Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5
375.	show ipv6 ospf neighbor		Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5
376.	show ipv6 prefix-list		Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
377.	show ipv6 route		Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
378.	show ipv6 route summary		Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 5.2
379.	show ipv6 route tag		Cisco IOS 15.2 through 15.4
380.	show isis database		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
381.	show isis interface		IOS XR 3.0 through 5.2; NX-OS 4.0 through 6.2
382.	show isis topology		Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
383.	show lacp counters		IOS XR 3.2 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
384.	show lacp interface		NX-OS 4.0 through 6.2
385.	show lacp neighbor		NX-OS 4.0 through 6.2
386.	show link state group		Cisco IOS 15.1 through 15.4; IOS XE 3.5
387.	show lldp		Cisco IOS 12.2 through 15.4; IOS XR 4.3 through 5.2; IOS XE 3.5
388.	show lldp neighbors		Cisco IOS 15.4; IOS XR 4.3 through 5.2; IOS XE 3.5; NX-OS 5.0 through 6.2
389.	show lldp traffic		Cisco IOS 15.4; IOS XR 4.3 through 5.2; IOS XE 3.5; NX-OS 5.0 through 6.2
390.	show mac access-list		Cisco IOS 15.4; IOS XE 3.5; NX- OS 4.0 through 6.2
391.	show mac address-table		Cisco IOS 11.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
392.	show mac address-table aging time		Cisco IOS 15.4; IOS XE 3.5; NX- OS 4.0 through 6.2
393.	show mac address-table count		IOS XE 3.5; NX-OS 4.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
394.	show module		Cisco IOS 12.2 through 15.4; IOS XR 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
395.	show monitor session		Cisco IOS 12.2 through 15.0; IOS XR 5.2; IOS XE 2.1; NX-OS 4.0 through 6.2
396.	show ntp associations		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5
397.	show ntp status		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2
398.	show policy-map control-plane		Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
399.	show policy-map interface		Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 6.2
400.	show policy-map interface control-plane		NX-OS 5.0 through 6.2
401.	show port-channel summary		NX-OS 4.0 through 6.2
402.	show port-channel traffic		NX-OS 4.0 through 6.2
403.	show port-security		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
404.	show port-security address		Cisco IOS 15.4; IOS XE 3.5; NX- OS 4.0 through 6.2
405.	show port-security interface		IOS XE 3.5; NX-OS 4.0 through 6.2
406.	show privilege		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 6.2
407.	show ptp clock		NX-OS 5.2 through 6.2
408.	show ptp parent		NX-OS 5.2 through 6.2
409.	show ptp time-property		NX-OS 5.2 through 6.2
410.	show radius		IOS XR 3.2 through 5.2; NX-OS 4.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
411.	show redundancy states		Cisco IOS 12.2 through 15.4; IOS XR 5.2; IOS XE 3.5
412.	show reload		Cisco IOS 11.0 through 15.4; IOS XE 2.1
413.	show role		NX-OS 4.0 through 6.2
414.	show route-map		Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
415.	show snmp		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
416.	show snmp chassis		Cisco IOS 12.4 through 15.4; IOS XE 3.5
417.	show snmp community		Cisco IOS 12.4 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2
418.	show snmp contact		Cisco IOS 12.4 through 15.4; IOS XE 3.5
419.	show snmp engineID		Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
420.	show snmp group		Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
421.	show snmp host		Cisco IOS 12.4 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
422.	show snmp location		Cisco IOS 12.4 through 15.4; IOS XE 3.5
423.	show snmp mib		Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5
424.	show snmp source-interface		NX-OS 5.0 through 6.2
425.	show snmp trap		NX-OS 4.0 through 6.2
426.	show snmp user		Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
427.	show snmp view		Cisco IOS 12.4 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5
428.	show spanning-tree		Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5; NX–OS 4.0 through 6.2
429.	show spanning-tree blockedports		NX-OS 6.2
430.	show spanning-tree bridge		NX-OS 4.0 through 6.2
431.	show spanning-tree interface		NX-OS 4.0 through 6.2
432.	show spanning-tree mst		Cisco IOS 12.2 through 15.4; IOS XR 4.3 through 5.2; IOS XE 2.1; NX–OS 4.0 through 6.2
433.	show spanning-tree mst configuration		Cisco IOS 15.4; IOS XR 4.3 through 5.2; IOS XE 2.1; NX–OS 4.0 through 6.2
434.	show spanning-tree mst interface		IOS XR 4.3 through 5.2; NX–OS 6.2
435.	show spanning-tree root		NX-OS 4.0 through 6.2
436.	show storm-control		Cisco IOS 12.2 through 15.4; IOS XE 3.5
437.	show tacacs		Cisco IOS 11.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX–OS 4.0 through 6.2
438.	show track		Cisco IOS 12.2 through 15.4; IOS XR 4.3 through 5.2; IOS XE 2.1 through 3.5; NX–OS 4.0 through 6.2
439.	show user-account		NX-OS 4.0 through 6.2
440.	show version		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX–OS 4.0 through 6.2
441.	show vlan		Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX–OS 4.0 through 6.2
442.	show vlan private-vlan		NX-OS 4.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
443.	show vlan summary		NX-OS 6.2
444.	show vrf		Cisco IOS 12.2 through 15.4; IOS XR 3.5 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
445.	show vrrp		Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
446.	snmp trap link-status		Cisco IOS 11.0 through 15.4; IOS XR 5.2; IOS XE 2.1 through 3.5
447.	snmp-server chassis-id		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5
448.	snmp-server community		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
449.	snmp-server contact		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
450.	snmp-server enable traps		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
451.	snmp-server engineID local		Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5
452.	snmp-server engineID remote		Cisco IOS 12.1 through 15.4; IOS XR 4.3 through 5.2; IOS XE 2.1 through 3.5
453.	snmp-server group		Cisco IOS 11.3 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5
454.	snmp-server host		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
455.	snmp-server location		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
456.	snmp-server source-interface		Cisco IOS 12.2 through 15.4; IOS XE 2.1; NX-OS 5.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
457.	snmp-server user		Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
458.	snmp-server view		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5
459.	spanning-tree bpdufilter		Cisco IOS 12.2 through 15.4; NX-OS 4.0 through 6.2
460.	spanning-tree bpduguard		Cisco IOS 12.2; NX-OS 4.0 through 6.2
461.	spanning-tree bridge assurance		NX-OS 4.0 through 6.2
462.	spanning-tree cost		Cisco IOS 12.0 through 15.4; NX-OS 4.0 through 6.2
463.	spanning-tree guard		Cisco IOS 12.2; NX-OS 4.0 through 6.2
464.	spanning-tree link-type		Cisco IOS 12.2; NX-OS 4.0 through 6.2
465.	spanning-tree loopguard default		Cisco IOS 12.2; NX-OS 4.0 through 6.2
466.	spanning-tree mode		Cisco IOS 12.2 through 15.4; NX-OS 4.0 through 6.2
467.	spanning-tree mst configuration		Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
468.	spanning-tree portfast bpdufilter default		Cisco IOS 12.2
469.	spanning-tree portfast bpduguard default		Cisco IOS 12.2
470.	spanning-tree port-priority		Cisco IOS 12.0 through 15.4; NX-OS 4.0 through 6.2
471.	spanning-tree transmit hold- count		Cisco IOS 12.2
472.	spanning-tree vlan		Cisco IOS 12.0 through 15.4; IOS XE 2.1; NX-OS 4.0 through 6.2
473.	spf-interval		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
474.	statistics per-entry	ACL configuration modes	NX–OS 4.0 through 6.2
475.	storm-control		Cisco IOS 12.2 through 15.4; IOS XR 4.3 through 5.2; IOS XE 3.5; NX–OS 4.0 through 6.2
476.	switchport access vlan		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX–OS 4.0 through 6.2
477.	switchport backup interface		Cisco IOS 12.2 through 15.4
478.	switchport mode		Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX–OS 4.0 through 6.2
479.	switchport port-security		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX–OS 4.0 through 6.2
480.	switchport port-security maximum		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX–OS 4.0 through 6.2
481.	switchport private-vlan mapping		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX–OS 4.0 through 6.2
482.	switchport trunk allowed vlan		Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX–OS 4.0 through 6.2
483.	switchport trunk native vlan		Cisco IOS 12.2 through 15.4; NX–OS 4.0 through 6.2
484.	switchport vlan mapping		Cisco IOS 12.2 through 15.4; IOS XE 3.5;
485.	tacacs-server host		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX–OS 4.0 through 6.2
486.	tacacs-server key		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX–OS 4.0 through 6.2
487.	tacacs-server timeout		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX–OS 4.0 through 6.2

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
488.	terminal monitor		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
489.	timers basic (RIP)		Cisco IOS 11.0 through 15.4; IOS XR 3.3 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
490.	timers bgp		Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2
491.	timers lsa arrival	OSPFv2	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
492.	timers throttle lsa all	OSPFv2	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5
493.	timers throttle spf	OSPFv2	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
494.	username sshkey		NX-OS 4.0 through 6.2
495.	vlan internal allocation policy		Cisco IOS 12.2
496.	vrf definition		Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2
497.	vrf forwarding		Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 6.2
498.	vrrp authentication		Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 6.2
499.	vrrp delay reload		Cisco IOS 15.1 through 15.4; IOS XR 3.4 through 5.2; IOS XE 3.5
500.	vrrp description		Cisco IOS 12.0 through 15.4; IOS XE 3.5
501.	vrrp ip		Cisco IOS 12.0 through 15.4; IOS XR 5.2; IOS XE 3.5
502.	vrrp ip secondary		IOS 12.0 through 15.4; IOS XE 3.5
503.	vrrp preempt		Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5

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	Cisco CLI Command Expression	Protocol or Routing Mode (where applicable)	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears
504.	vrrp priority		Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5
505.	vrrp shutdown		Cisco IOS 12.4 through 15.4; IOS XE 3.5
506.	vrrp timers advertise		Cisco IOS 12.0 through 15.4; IOS XE 3.5

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Appx51136

Cisco Summary Exhibit
Help Description Analysis

Cisco Help Description (IOS-XR 5.1.4)	Arista Help Description (EOS 4.13.5)
AAA group definitions	AAA group definitions
Specifies that an UNENCRYPTED key will follow	Specifies that an UNENCRYPTED key will follow
Label value	Label value
Exit from configure mode	Exit from configure mode
Configure from the terminal	Configure from the terminal
Include lines that match	Include lines that match
Exclude lines that match	Exclude lines that match
Begin with the line that matches	Begin with the line that matches
No accounting	No accounting
User Datagram Protocol	User Datagram Protocol
Global IPv6 configuration commands	Global IPv6 configuration commands
BFD information	BFD information
Display the system clock	Display the system clock
Show controller information	Show controller information
Packet counters	Packet Counters
debug counters	Debug Counters
Interval in seconds	Interval in seconds
Detailed information	Detailed information
Priority level	Priority level
object name	Object Name
Copy from current system configuration	Copy from current system configuration
Update (merge with) current system configuration	Update (merge with) current system configuration
Display the contents of a file	Display the contents of a file
Current operating configuration	Current operating configuration
Rule number	Rule number

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Appx51137

Tunnel ID	Tunnel ID
Version number	Version number
IGMP host query interval	IGMP host query interval
Query interval in seconds	Query interval in seconds
Multicast source address	Multicast source address
Detailed interface information	Detailed interface information
Specify interface	Specify interface
VLAN ID	VLAN ID
Interface status and configuration	Interface status and configuration
disable the interface	Disable the interface
Specify interval for load calculation for an interface	Specify interval for load calculation for an interface
MTU (bytes)	MTU (bytes)
Interface events	Interface events
Prefix length	Prefix length
Set IPv6 Router Advertisement Interval	Set IPv6 Router Advertisement Interval
Interval in milliseconds	Interval in milliseconds
IPv6 information	IPv6 information
IPv6 interface status and configuration	IPv6 interface status and configuration
Brief output	Brief output
Set advertised NS retransmission interval	Set advertised NS retransmission interval
Time to Live value	Time to Live Value
Entry index	Entry Index
Destination IP Address	Destination Ip Address
48-bit hardware address of ARP entry	48-bit hardware address of ARP entry
IP routing table	IP routing table
MAC address	MAC address
Enable proxy ARP	Enable proxy ARP
Enable local proxy ARP	Enable local proxy ARP
route distinguisher	Route Distinguisher
Address family IPv4	Address family IPv4
Address family IPv6	Address family IPv6

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Appx51138

Default vrf	Default vrf
Time interval in seconds	Time interval in seconds
Port Description TLV	Port Description TLV
System Name TLV	System Name TLV
System Description TLV	System Description TLV
System Capabilities TLV	System Capabilities TLV
Management Address TLV	Management Address TLV
Show the contents of logging buffers	Show the contents of logging buffers
Set buffered logging parameters	Set buffered logging parameters
all modules	All modules
Number of lines on screen (0 for no pausing)	Number of lines on screen (0 for no pausing)
Multicast Source Discovery Protocol (MSDP)	Multicast Source Discovery Protocol (MSDP)
Show detailed information	Show detailed information
Interface Name	Interface Name
Interface filter	Interface filter
TCP protocol	TCP protocol
UDP protocol	UDP protocol
Send echo messages	Send echo messages
IPv4 echo	IPv4 echo
IPv6 echo	IPv6 echo
Ping destination address or hostname	Ping destination address or hostname
Repeat count	Repeat count
datagram size	Datagram size
Timeout in seconds	Timeout in seconds
Trace route to destination	Trace route to destination
IPv4 Trace	IPv4 Trace
IPV6 Trace	IPv6 Trace
Trace route to destination address or hostname	Trace route to destination address or hostname
Open a telnet connection	Open a telnet connection
Port number	Port number
Network time protocol	Network time protocol

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Appx51139

Appx51139

NTP status	NTP status
NTP associations	NTP associations
Key number	Key number
NTP version number	NTP version number
port Id	Port id
Port name	Port name
Display detailed information	Display detailed information
Host name	Host name
Sequence number	Sequence Number
next hop address	next hop address
Differentiated Services Code Point (DSCP)	Differentiated Services Code Point (DSCP)
Hello interval	Hello interval
Neighbor filter	Neighbor filter
Number of MAC addresses	Number of MAC addresses
Show PTP interface information	Show PTP interface information
Set IP DSCP (DiffServ CodePoint)	Set IP DSCP (DiffServ CodePoint)
Show detailed output	Show detailed output
Time in minutes	Time in minutes
Specify a RADIUS server	Specify a RADIUS server
Radius configuration	RADIUS configuration
Next Hop	Next hop
AS Number	AS Number
BGP timers	BGP Timers
Keepalive interval	Keepalive interval
Hold Time	Hold time
Open Shortest Path First (OSPF)	Open Shortest Path First (OSPF)
Redistribution of OSPF routes	Redistribution of OSPF routes
Redistribute OSPF external routes	Redistribute OSPF external routes
Redistribute OSPF internal routes	Redistribute OSPF internal routes
Administratively shut down this neighbor	Administratively shut down this neighbor
Define an administrative distance	Define an administrative distance

Appx51140

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BGP distance	BGP distance
Delay value (seconds)	Delay value (seconds)
IPv4 address family	IPv4 address family
IPv6 address family	IPv6 address family
IS-IS instance name	IS-IS instance name
Address Family modifier	Address family modifier
Suppress routing updates on this interface	Suppress routing updates on this interface
Detailed Output	Detailed Output
Neighbor information	Neighbor information
Process ID	Process ID
Control distribution of default information	Control distribution of default information
Distribute a default route	Distribute a default route
Metric value	Metric value
Database summary	Database summary
Advertising Router link states	Advertising Router link states
Self-originated link states	Self-originated link states
Filter by Interface Name	Filter by Interface Name
Border and Boundary Router Information	Border and Boundary Router Information
Interface information	Interface information
Neighbor list	Neighbor list
Display OSPF router ids as DNS names	Display OSPF router IDs as DNS names
Enable authentication	Enable authentication
Suppress routing updates on an interface	Suppress routing updates in an interface
Brief interface information	Brief interface information
ASBR summary link states	ASBR summary link states
External link states	External link state
Network link states	Network link states
NSSA External link states	NSSA External link states
Opaque Area link states	Opaque Area link states
Opaque AS link states	Opaque AS link states
Opaque Link-Local link states	Opaque Link-Local link states

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Appx51141

Router link states	Router link states
Network summary link states	Network summary link states
Connected routes	Connected routes
Threshold value	Threshold value
Traffic class	Traffic class
Source MAC address	Source MAC address
Destination MAC address	Destination MAC address
SNMP statistics	SNMP statistics
Name of the group	Name of the group
Name of the user	Name of the user
Name of the view	Name of the view
SNMP community string	SNMP community string
MIB view to which the community has access	MIB view to which this community has access
String to uniquely identify this chassis	String to uniquely identify this chassis
Unique ID string	Unique ID string
Text for mib Object sysContact	Text for mib object sysContact
identification of the contact person for this managed node	Identification of the contact person for this managed node
Configure a local or remote SNMPv3 engineID	Configure a local or remote SNMPv3 engineID
engineID of the local agent	EngineID of the local agent
engineID of the remote agent	EngineID of a remote agent
Text for mib Object sysLocation	Text for mib object sysLocation
The physical location of this node	The physical location of this node
Define an SNMPv2 MIB view	Define an SNMPv2 MIB view
MIB view family name	MIB view family name
MIB family is included in the view	MIB family is included in the view
MIB family is excluded from the view	MIB family is excluded from the view
Define a user who can access the SNMP engine	Define a user who can access the SNMP engine
Group to which the user belongs	Group to which the user belongs
Specify a remote SNMP entity to which the user belongs	Specify a remote SNMP entity to which the user belongs
authentication parameters for the user	Authentication parameters for the user
Use HMAC MD5 algorithm for authentication	Use HMAC MD5 algorithm for authentication

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Use HMAC SHA algorithm for authentication	Use HMAC SHA algorithm for authentication
user using the v1 security model	User using the v1 security model
user using the v2c security model	User using the v2c security model
user using the v3 security model	User using the v3 security model
Define a User Security Model group	Define a User Security Model group
group using the v1 security model	Group using the v1 security model
group using the v2c security model	Group using the v2c security model
group using the User Security Model (SNMPv3)	Group using the User Security Model (SNMPv3)
Context name	Context name
read view name	Read view name
specify a write view for this group	Specify a write view for the group
write view name	write view name
specify a notify view for the group	Specify a notify view for the group
notify view name	Notify view name
Specify hosts to receive SNMP notifications	Specify hosts to receive SNMP notifications
Send Trap messages to this host	Send Trap messages to this host
Send Inform messages to this host	Send Inform messages to this host
SNMP version to use for notification messages	SNMP version to use for notification messages
Group number	Group number
Set TACACS+ encryption key	Set TACACS+ encryption key
Wait time (default 5 seconds)	Wait time (default 5 seconds)
Specify a TACACS+ server	Specify a TACACS+ server
Select an interface to configure	Select an interface to configure
User name	User name
Virtual terminal	Virtual terminal
Topology Information	Topology information
Track an interface	Track an interface
Session information	Session information
Clear platform information	Clear platform information

Appx51143

Cisco Summary Exhibit
Output Copying

Cisco	Arista

Cisco

Command Examples This example shows the output from the **show port-security** command when you do not enter any options:

```
Router# show port-security
Secure Port  MaxSecureAddr  CurrentAddr  SecurityViolation  Security
               (Count)        (Count)       (Count)          Action
--------------------------------------------------------------------
  Fa5/1         11             11            0                Shutdown
  Fa5/5         15              5            0                Restrict
  Fa5/11         5              4            0                Protect
--------------------------------------------------------------------
Total Addresses in System: 21
Max Addresses limit in System: 128
Router#
```

Cisco IOS Security Command Reference Commands S to Z, IOS 15.2, at 692

```
Router# show interface cbr 6/0
CBR6/0 is up, line protocol is up
  Hardware is DCU
  MTU 0 bytes, BW 1544 Kbit, DLY 0 usec, rely 255/255, load 248/255
  Encapsulation ET_ATMCES_T1, loopback not set
  Last input 00:00:00, output 00:00:00, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy: fifo
  Output queue 0/0, 0 drops; input queue 0/75, 0 drops
  5 minute input rate 1507000 bits/sec, 3957 packets/sec
  5 minute output rate 1507000 bits/sec, 3955 packets/sec
     3025960 packets input, 142220120 bytes, 0 no buffer
     Received 0 broadcasts, 0 runts, 0 giants
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     3030067 packets output, 142413149 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     0 output buffer failures, 0 output buffers swapped out
The table below describes the fields shown in the display.
```

Cisco IOS Asynchronous Transfer Mode Command Reference (2013), at 460

Arista

```
switch(config)#clear mac address-table dynamic interface ethernet 7
switch(config)#show port-security
Secure Port  MaxSecureAddr  CurrentAddr  SecurityViolation  Security Action
               (Count)        (Count)       (Count)
-----------------------------------------------------------------------------
   Et7          2              2             0                Shutdown
-----------------------------------------------------------------------------
```

Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 632.

See also Arista User Manual v. 4.13.6F (4/14/2014), at 624; Arista User Manual v. 4.12.3 (7/17/13), at 501; Arista User Manual v. 4.11.1 (1/11/13), at 405-06; Arista User Manual v. 4.10.3 (10/22/12), at 336.

```
switch#show interfaces ethernet 1
Ethernet1 is up, line protocol is up (connected)
  Hardware is Ethernet, address is 001c.7302.2fff (bia 001c.7302.2fff)
  MTU 9212 bytes, BW 10000000 Kbit
  Full-duplex, 10Gb/s, auto negotiation: off
  Last clearing of "show interface" counters never
  5 minutes input rate 301 bps (0.0% with framing), 0 packets/sec
  5 minutes output rate 0 bps (0.0% with framing), 0 packets/sec
     2285370854005 packets input, 2250285282832583 bytes
     Received 2976609741 broadcasts, 3073437605 multicast
     113 runts, 1 giants
     118 input errors, 117 CRC, 0 alignment, 18 symbol
     2751409 PAUSE input
     335031607678 packets output, 2784541318330 bytes
     Sent 1428231688 broadcasts, 54045824072 multicast
     108 output errors, 0 collisions
     0 late collision, 0 deferred
     0 PAUSE output
```

Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 413.
Arista User Manual v. 4.11.2.1 (3/1/2013), at 447.
Arista User Manual v. 4.12.4 (9/16/2013), at 533.
Arista User Manual v. 4.13.6F (4/14/2014), at 637.
Arista User Manual v. 4.13.7M (6/17/2014), at 638.
Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 646
Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 648.

Appx51144

Cisco	Arista

```Router# show interfaces```
```Ethernet0/0 is up, line protocol is up```
``` Hardware is AmdP2, address is aabb.cc03.6c00 (bia aabb.cc03.6c00)```
``` Internet address is 172.17.1.1/16```
``` MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec,```
```   reliability 255/255, txload 1/255, rxload 1/255```
``` Encapsulation ARPA, loopback not set```
``` Keepalive set (10 sec)```
``` ARP type: ARPA, ARP Timeout 04:00:00```
``` Last input never, output 00:00:06, output hang never```
``` Last clearing of "show interface" counters never```
``` Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0```
``` Queueing strategy: fifo```
``` Output queue: 0/40 (size/max)```
``` 5 minute input rate 0 bits/sec, 0 packets/sec```
``` 5 minute output rate 0 bits/sec, 0 packets/sec```
```   0 packets input, 0 bytes, 0 no buffer```
```   Received 0 broadcasts, 0 runts, 0 giants, 0 throttles```
```   0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored```
```   0 input packets with dribble condition detected```
```   11 packets output, 1648 bytes, 0 underruns```
```   0 output errors, 0 collisions, 1 interface resets```
```   0 babbles, 0 late collision, 0 deferred```
```   0 lost carrier, 0 no carrier```
```   0 output buffer failures, 0 output buffers swapped out```
 	
Cisco Configuration Fundamentals Configuration Guide, Cisco IOS Release 15M&T (2013), at 44
 	
Use the *show interface interface-type interface-number* command to display the information and statistics for Ethernet 0 on R4.
```R4> show interface ethernet 0```
```Ethernet0 is up, line protocol is up```
``` Hardware is Lance, address is 00e0.1eb8.eb0e (bia 00e0.1eb8.eb0e)```
The MAC address for Ethernet 0 on R4 is 00e0.1eb8.eb0e. The format of the client identifier for this interface is nullcisco-00e0.1eb8.eb0e-et0.
	Arista User Manual v. 4.14.6M (1/19/2015), at 644.
	Arista User Manual v. 4.15.0F (4/18/2015), at 652.
	Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 644.
	
	```switch#show interfaces ethernet 1```
	```Ethernet1 is up, line protocol is up (connected)```
	``` Hardware is Ethernet, address is 001c.7302.2fff (bia 001c.7302.2fff)```
	``` MTU 9212 bytes, BW 10000000 Kbit```
	``` Full-duplex, 10Gb/s, auto negotiation: off```
	``` Last clearing of "show interface" counters never```
	``` 5 minutes input rate 301 bps (0.0% with framing), 0 packets/sec```
	``` 5 minutes output rate 0 bps (0.0% with framing), 0 packets/sec```
	``` 22853370854005 packets input, 225028582832583 bytes```
	``` Received 2976609741 broadcasts, 3073437605 multicast```
	``` 113 runts, 1 giants```
	``` 118 input errors, 117 CRC, 0 alignment, 18 symbol```
	``` 27511409 PAUSE input```
	``` 335031607678 packets output, 278454313138330 bytes```
	``` Sent 1428216688 broadcasts, 54045824072 multicast```
	``` 108 output errors, 0 collisions```
	``` 0 late collision, 0 deferred```
	``` 0 PAUSE output```
	
	Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 413.
	Arista User Manual v. 4.11.2.1 (3/1/2013), at 447.
	Arista User Manual v. 4.12.4 (9/16/2013), at 533.
	Arista User Manual v. 4.13.6F (4/14/2014), at 637.
	Arista User Manual v. 4.13.7M (6/17/2014), at 638.
	Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 646.
	Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 648.
	Arista User Manual v. 4.14.6M (1/19/2015), at 644.
	Arista User Manual v. 4.15.0F (4/18/2015), at 652.
	Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 644.
	
	This command assigns the MAC address of 001c.2804.17e1 to Ethernet interface 7, then displays interface parameters, including the assigned address.
	```switch(config)#interface ethernet 7```
	```switch(config-if-Et7)#mac-address 001c.2804.17e1```
	```switch(config-if-Et7)#show interface ethernet 7```
	```Ethernet3 is up, line protocol is up (connected)```
	``` Hardware is Ethernet, address is 001c.2804.17e1 (bia 001c.7312.02e2)```

Cisco	Arista
Configuration Fundamentals Configuration Guide, Cisco IOS Release 15M&T (2013), at 81	Arista User Manual v. 4.14.3F – Rev. 2 (10/2/14), at 437.
	See also Arista User Manual v. 4.12.3 (7/17/13), at 371; Arista User Manual, v. 4.11.1 (1/11/13), at 312; Arista User Manual v. 4.10.3 (10/22/12), at 270; Arista User Manual v. 4.9.3.2 (5/3/12), at 252.
The following is sample output from the **show ip igmp snooping** command: ``` Router# show ip igmp snooping Global IGMP Snooping configuration: --- IGMP snooping : Enabled IGMPv3 snooping (minimal) : Enabled Report suppression : Enabled TCN solicit query : Disabled TCN flood query count : 2 Last Member Query Interval : 1000 ```	**Example** - This command displays the switch's IGMP snooping configuration. ``` switch>show ip igmp snooping Global IGMP Snooping configuration: --- IGMP snooping : Enabled Robustness variable : 2 ```
Cisco IOS IP Multicast Command Reference (2013), at 626	Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 1263. Arista User Manual v. 4.11.2.1 (3/1/2013), at 1339. Arista User Manual v. 4.12.4 (9/16/2013), at 1559. Arista User Manual v. 4.13.6F (4/14/2014), at 1733. Arista User Manual v. 4.13.7M (6/17/2014), at 1810. Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1785. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1799. Arista User Manual v. 4.14.6M (1/19/2015), at 1794. Arista User Manual v. 4.15.0F (4/18/2015), at 1803. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1797.
Examples This example shows how to display transceiver information:	**Examples** - This command displays transceiver data on Ethernet interfaces 1 through 4.
Cisco IOS Interfaces and Hardware Component Command Reference (2013), at 1879	

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	Arista User Manual v. 4.14.3F – Rev. 2 (10/2/14), at 451.

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See also Arista User Manual v. 4.12.3 (7/17/13), at 385; Arista User Manual, v. 4.11.1 (1/11/13), at 326; Arista User Manual v. 4.10.3 (10/22/12), at 284; Arista User Manual v. 4.9.3.2 (5/3/12), at 266.

```
switch#show ip ospf
Routing Process "ospf 1" with ID 10.168.103.1
Supports opaque LSA
Maximum number of LSA allowed 12000
 Threshold for warning message 75%
 Ignore-time 5 minutes, reset-time 5 minutes
 Ignore-count allowed 5, current 0
It is an area border router
Hold time between two consecutive SPFs 5000 msecs
SPF algorithm last executed 00:00:09 ago
Minimum LSA interval 5 secs
Minimum LSA arrival 1000 msecs
Number of external LSA 0. Checksum Sum 0x000000
Number of opaque AS LSA 0. Checksum Sum 0x000000
Number of LSA 27.
Number of areas in this router is 3. 3 normal 0 stub 0 nssa
Area BACKBONE(0.0.0.0)
    Number of interfaces in this area is 2
    It is a normal area
    Area has no authentication
    SPF algorithm executed 153 times
    Number of LSA 8. Checksum Sum 0x03e13a
    Number of opaque link LSA 0. Checksum Sum 0x000000
Area 0.0.0.2
    Number of interfaces in this area is 1
    It is a normal area
    Area has no authentication
    SPF algorithm executed 153 times
    Number of LSA 11. Checksum Sum 0x054e57
    Number of opaque link LSA 0. Checksum Sum 0x000000
Area 0.0.0.3
    Number of interfaces in this area is 1
    It is a normal area
    Area has no authentication
    SPF algorithm executed 5 times
    Number of LSA 6. Checksum Sum 0x02a401
    Number of opaque link LSA 0. Checksum Sum 0x000000
```

Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 947.
Arista User Manual v. 4.11.2.1 (3/1/2013), at 991.
Arista User Manual v. 4.12.4 (9/16/2013), at 1226.
Arista User Manual v. 4.13.6F (4/14/2014), at 1341-1342.

Cisco

The following is sample output from the show ip ospf command when entered without a specific OSPF process ID:

```
Router# show ip ospf

Routing Process "ospf 201" with ID 10.0.0.1 and Domain ID 10.20.0.1
Supports only single TOS(TOS0) routes
Supports opaque LSA
It is an area border and autonomous system boundary router
Redistributing External Routes from, Hold time between two SPFs 10 secs
Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs
LSA group pacing timer 100 secs
Interface flood pacing timer 55 msecs
Retransmission pacing timer 100 msecs
Number of external LSA 0. Checksum Sum 0x0
Number of opaque AS LSA 0. Checksum Sum 0x0
Number of DCbitless external and opaque AS LSA 0
Number of DoNotAge external and opaque AS LSA 0
Number of areas in this router is 2. 2 normal 0 stub 0 nssa
External flood list length 0
    Area BACKBONE(0)
        Number of interfaces in this area is 2
        Area has message digest authentication
        SPF algorithm executed 4 times
        Area ranges are
        Number of LSA 4. Checksum Sum 0x29BEB
        Number of opaque link LSA 0. Checksum Sum 0x0
        Number of DCbitless LSA 3
        Number of indication LSA 0
        Number of DoNotAge LSA 0
        Flood list length 0
    Area 172.16.26.0
        Number of interfaces in this area is 0
        Area has no authentication
        SPF algorithm executed 1 times
        Area ranges are
            192.168.0.0/16 Passive Advertise
        Number of LSA 1. Checksum Sum 0x44FD
        Number of opaque link LSA 0. Checksum Sum 0x0
        Number of DCbitless LSA 1
        Number of indication LSA 1
        Number of DoNotAge LSA 0
        Flood list length 0
```

Cisco IOS IP Routing:OSPF Command Reference (2013), at 174

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Cisco	Arista
Examples	Arista User Manual v. 4.13.7M (6/17/2014), at 1359-1360. Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1391-1392. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1413. Arista User Manual v. 4.14.6M (1/19/2015), at 1409. Arista User Manual v. 4.15.0F (4/18/2015), at 1417. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1411.

Cisco side:

```
The following is sample output from the show snmp command:

Router# show snmp
Chassis: 1234003
0 SNMP packets input
    0 Bad SNMP version errors
    0 Unknown community name
    0 Illegal operation for community name supplied
    0 Encoding errors
    0 Number of requested variables
    0 Number of altered variables
    0 Get-request PDUs
    0 Get-next PDUs
    0 Set-request PDUs
    0 Input queue packet drops (Maximum queue size 1000)
0 SNMP packets output
    0 Too big errors (Maximum packet size 1500)
    0 No such name errors
    0 Bad values errors
    0 General errors
    0 Response PDUs
    0 Trap PDUs
SNMP logging: enabled
    SNMP Trap queue: 0 dropped due to resource failure.
```

Cisco IOS SNMP Support Command Reference (2013), at 83

Arista side:

Example

- This command configures *xyz-1234* as the chassis-ID string, then displays the result.

```
switch(config)#snmp-server chassis-id xyz-1234
switch(config)#show snmp
    Chassis: xyz-1234                              <--chassis ID

8 SNMP packets input
    0 Bad SNMP version errors
    0 Unknown community name
    0 Illegal operation for community name supplied
    0 Encoding errors
    8 Number of requested variables
    0 Number of altered variables
    4 Get-request PDUs
    4 Get-next PDUs
    0 Set-request PDUs
21 SNMP packets output
    0 Too big errors
    0 No such name errors
    0 Bad value errors
    0 General errors
    8 Response PDUs
    0 Trap PDUs
SNMP logging: enabled
    Logging to taccon.162
SNMP agent enabled
switch(config)#
```

Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 1352-1353.
Arista User Manual v. 4.11.2.1 (3/1/2013), at 1432-1433.
Arista User Manual v. 4.12.4 (9/16/2013), at 1705-1706.
Arista User Manual v. 4.13.6F (4/14/2014), at 1895-1896.
Arista User Manual v. 4.13.7M (6/17/2014), at 1923-1924.
Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1967-68.

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Cisco	Arista
	Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1981-82. Arista User Manual v. 4.14.6M (1/19/2015), at 1977-1978. Arista User Manual v. 4.15.0F (4/18/2015), at 1985-1986. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1979-1980

Arista column (examples):

Examples
- These commands display interface counters, clear the counters, then display the counters again.

```
switch#show interfaces ethernet 1
Ethernet1 is up, line protocol is up (connected)
  Hardware is Ethernet, address is 001c.7302.2fff (bia 001c.7302.2fff)
  MTU 9212 bytes, BW 10000000 Kbit
  Full-duplex, 10Gb/s, auto negotiation: off
  Last clearing of "show interface" counters never
  5 minutes input rate 301 bps (0.0% with framing), 0 packets/sec
  5 minutes output rate 0 bps (0.0% with framing), 0 packets/sec
     2285370854005 packets input, 2250285282832583 bytes
     Received 2976660741 broadcasts, 3073437605 multicast
     113 runts, 1 giants
     118 input errors, 117 CRC, 0 alignment, 18 symbol
     2751409 PAUSE input
     33501607678 packets output, 2784541313830 bytes
     Sent 1428231688 broadcasts, 5404582407Z multicast
     108 output errors, 0 collisions
     0 late collision, 0 deferred
     0 PAUSE output
```

Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 413.
Arista User Manual v. 4.11.2.1 (3/1/2013), at 447.
Arista User Manual v. 4.12.4 (9/16/2013), at 533.
Arista User Manual v. 4.13.6F (4/14/2014), at 637.
Arista User Manual v. 4.13.7M (6/17/2014), at 638.
Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 646.
Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 648.
Arista User Manual v. 4.14.6M (1/19/2015), at 644.
Arista User Manual v. 4.15.0F (4/18/2015), at 652.
Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 644.

Cisco column:

```
Router# show interfaces atm 0/0/0
ATM0/0/0 is up, line protocol is up
  Hardware is cyBus ATM
  Internet address is 10.1.1.1/24
  MTU 4470 bytes, sub MTU 4470, BW 156250 Kbit, DLY 80 usec, rely 255/255, load 1/255
  Encapsulation ATM, loopback not set, keepalive set (10 sec)
  Encapsulation(s): AAL5, PVC mode
  256 TX buffers, 256 RX buffers,
  2048 maximum active VCs, 1024 VCs per VP, 1 current VCCs
  VC idle disconnect time: 300 seconds
  Last input never, output 00:00:05, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  5 minute input rate 0 bits/sec, 1 packets/sec
  5 minute output rate 0 bits/sec, 1 packets/sec
     5 packets input, 560 bytes, 0 no buffer
     Received 0 broadcasts, 0 runts, 0 giants
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     5 packets output, 560 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     0 output buffer failures, 0 output buffers swapped out
```

Cisco IOS Asynchronous Transfer Mode Command Reference (2011), at ATM-377

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Cisco

```
Router# show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route

Gateway of last resort is not set
```

Cisco IOS IP Routing Protocols Command Reference, Release
12.4 (2005), at IP2R-553

Arista

Examples

• This command displays IP routes learned through BGP

```
switch>show ip route bgp
Codes: C - connected, S - static, K - kernel,
       O - OSPF, IA - OSPF inter area, E1 - OSPF external type 1,
       E2 - OSPF external type 2, N1 - OSPF NSSA external type 1,
       N2 - OSPF NSSA external type2, B I - iBGP, B E - eBGP,
       R - RIP, A - Aggregate

B E  170.44.48.0/23 [20/0] via 170.44.254.78
B E  170.44.50.0/23 [20/0] via 170.44.254.78
B E  170.44.52.0/23 [20/0] via 170.44.254.78
B E  170.44.54.0/23 [20/0] via 170.44.254.78
B E  170.44.254.112/30 [20/0] via 170.44.254.78
B E  170.53.0.34/32 [1/0] via 170.44.254.78
B I  170.53.0.35/32 [1/0] via 170.44.254.2
                          via 170.44.254.13
                          via 170.44.254.20
                          via 170.44.254.67
                          via 170.44.254.35
                          via 170.44.254.98

switch>
```

Arista User Manual v. 4.10.0 (7/19/2012), at 617.
Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 840.
Arista User Manual v. 4.11.2.1 (3/1/2013), at 880.
Arista User Manual v. 4.12.4 (9/16/2013), at 1085.
Arista User Manual v. 4.13.6F (4/14/2014), at 1188.
Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1228.
Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1250.
Arista User Manual v. 4.14.6M (1/19/2015), at 1246.
Arista User Manual v. 4.15.0F (4/18/2015), at 1254.
Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1248.
Arista User Manual v. 4.13.7M (6/17/2014), at 1206.

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Cisco	Arista
	Chapter 37 SNMP

Usage Guidelines — This command provides counter information for SNMP operations. It also displays the chassis ID string defined with the **snmp-server chassis-id** global configuration command.

Command Examples — The following is sample output from the **show snmp** command:

```
Router# show snmp
Chassis: 12161083
0 SNMP packets input
  0 Bad SNMP version errors
  0 Unknown community name
  0 Illegal operation for community name supplied
  0 Encoding errors
  0 Number of requested variables
  0 Number of altered variables
  0 Get-request PDUs
  0 Get-next PDUs
  0 Set-request PDUs
  0 Input queue packet drops (Maximum queue size 1000)
0 SNMP packets output
  0 Too big errors (Maximum packet size 1500)
  0 No such name errors
  0 Bad values errors
  0 General errors
  0 Response PDUs
  0 Trap PDUs
SNMP logging: enabled
```

Cisco IOS SNMP Support Command Reference, IOS 15.2 (2011), at 95-96

Configuring SNMP

```
8 SNMP packets input
  0 Bad SNMP version errors
  0 Unknown community name
  0 Illegal operation for community name supplied
  0 Encoding errors
  8 Number of requested variables
  0 Number of altered variables
  4 Get-next PDUs
  0 Set-request PDUs
21 SNMP packets output
  0 Too big errors
  0 No such name errors
  0 Bad value errors
  0 General errors
  8 Response PDUs
  0 Trap PDUs
SNMP logging: enabled
  Logging to taccon.162
SNMP agent enabled
switch(config)#
```

Arista User Manual v. 4.10.0 (7/19/2012), at 1043.
Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 1353.
Arista User Manual v. 4.11.2.1 (3/1/2013), at 1433.
Arista User Manual v. 4.12.4 (9/16/2013), at 1706.
Arista User Manual v. 4.13.6F (4/14/2014), at 1896.
Arista User Manual v. 4.13.7M (6/17/2014), at 1924.
Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1968.
Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1982.
Arista User Manual v. 4.14.6M (1/19/2015), at 1978.
Arista User Manual v. 4.15.0F (4/18/2015), at 1986.
Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1980.

Cisco	Arista
| **Examples**<br>This example shows how to display VTP interface switchport information on the device:<br><br>```
switch# show interface switchport
Name: Ethernet8/11
  Switchport: Enabled
  Switchport Monitor: Not enabled
  Operational Mode: trunk
  Access Mode VLAN: 1 (default)
  Trunking Native Mode VLAN: 1 (default)
  Trunking VLANs Enabled: 1,10,20-30
  Pruning VLANs Enabled: 2-1001
  Administrative private-vlan primary host-association: none
  Administrative private-vlan secondary host-association: none
  Administrative private-vlan primary mapping: none
  Administrative private-vlan secondary mapping: none
  Administrative private-vlan trunk native VLAN: none
  Administrative private-vlan trunk encapsulation: dot1q
  Administrative private-vlan trunk normal VLANs: none
  Administrative private-vlan trunk private VLANs: none
  Operational private-vlan: none
switch#
```<br><br>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (Feb. 2013), at 44 | **Example**<br>• These commands create the trunk mode allowed VLAN list of 6-10 for Ethernet interface 14, then verifies the VLAN list.<br><br>```
switch(config)#interface ethernet 14
switch(config-if-Et14)#switchport trunk allowed vlan 6-10
switch(config-if-Et14)#show interfaces ethernet 14 switchport
Name: Et14
  Switchport: Enabled
  Administrative Mode: trunk
  Operational Mode: trunk
  Access Mode VLAN: 1 (inactive)
  Trunking Native Mode VLAN: 1 (inactive)
  Administrative Native VLAN tagging: disabled
  Trunking VLANs Enabled: 6-10
  Trunk Groups:

switch(config-if-Et14)#
```<br><br>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 798.<br><br>*See also* Arista User Manual v. 4.12.3 (7/17/13), at 645; Arista User Manual, v. 4.11.1 (1/11/13), at 498; Arista User Manual v. 4.10.3 (10/22/12), at 416; Arista User Manual v. 4.9.3.2 (5/3/12), at 355. |
| **Examples**<br>This example shows how to display information about the specified VLAN. This command displays statistical information gathered on the VLAN at 1-minute intervals:<br><br>```
switch# show interface vlan 5
Vlan5 is administratively down, line protocol is down
  Hardware is EtherSVI, address is 0000.0000.0000
  MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive not supported
  ARP type: ARPA
  Last clearing of "show interface" counters 01:21:55
  1 minute input rate 0 bytes/sec, 0 packets/sec
  1 minute output rate 0 bytes/sec, 0 packets/sec
  L3 Switched:
    input: 0 pkts, 0 bytes - output: 0 pkts, 0 bytes
  L3 in Switched:
    ucast: 0 pkts, 0 bytes - mcast: 0 pkts, 0 bytes
  L3 out Switched:
    ucast: 0 pkts, 0 bytes - mcast: 0 pkts, 0 bytes
```<br><br>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (Feb. 2013), at 49 | **Example**<br>• This command display configuration and status information for Ethernet interface 1 and 2.<br><br>```
switch>show interfaces ethernet 1-2
Ethernet1 is up, line protocol is up (connected)
  Hardware is Ethernet, address is 001c.2481.7647 (bia 001c.2481.7647)
  Description mtt.1
  MTU 9212 bytes, BW 10000000 Kbit
  Full-duplex, 10Gb/s, auto negotiation: off
  Last clearing of "show interface" counters never
  5 seconds input rate 33.5 Mbps (0.3% with framing), 846 packets/sec
  5 seconds output rate 180 kbps (0.0% with framing), 55 packets/sec
  76437268 packets input, 9428286608 bytes
  Received 2208 broadcasts, 73358 multicast
    0 runts, 0 giants
    0 input errors, 0 CRC, 0 alignment, 0 symbol
    0 PAUSE input
  6184281 packets output, 4071319140 bytes
  Sent 2209 broadcasts, 345754 multicast
    0 output errors, 0 collisions
    0 late collision, 0 deferred
    0 PAUSE output
```<br><br>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 437. |

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Appx51152

	Cisco	Arista
Examples	This example shows how to display STP when you are running Rapid PVST+: `switch# show spanning-tree` `VLAN0001` `  Spanning tree enabled protocol rstp` `  Root ID    Priority    32769` `             Address     000d.eca3.9f01` `             Cost        4` `             Port        4105 (port-channel10)` `             Hello Time  2  sec  Max Age 20 sec  Forward Delay 15 sec` `  Bridge ID  Priority    32769  (priority 32768 sys-id-ext 1)` `             Address     0022.5579.7641` `             Hello Time  2  sec  Max Age 20 sec  Forward Delay 15 sec` `Interface        Role Sts Cost      Prio.Nbr Type` `Po10             Root FWD 2         128.4105 (vPC peer-link) P2p` `Po20             Desg FWD 1         128.4115 (vPC) P2p` `Po30             Root FWD 1         128.4125 (vPC) P2p` Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (Feb. 2013), at 63	*See also* Arista User Manual *v.* 4.12.3 (7/17/13), at 371; Arista User Manual, v. 4.11.1 (1/11/13), at 312; Arista User Manual *v.* 4.10.3 (10/22/12), at 270; Arista User Manual *v.* 4.9.3.2 (5/3/12), at 252. Show commands (such as show spanning-tree) displays the RSTP instance as MST0 (MST instance 0). Example • This command, while the switch is in RST mode, displays RST instance information. `switch(config)#show spanning-tree` `MST0                                    `<---*RSTP mode indicator*` ` Spanning tree enabled protocol rstp` ` Root ID Priority 32768` ` Address 001c.730c.1867` ` This bridge is the root`  ` Bridge ID Priority 32768 (priority 32768 sys-id-ext 0)` ` Address 001c.730c.1867` ` Hello Time 2.000 sec Max Age 20 sec Forward Delay 15 sec`  `Interface Role State Cost Prio.Nbr Type`  `Et51 designated forwarding 2000 128.51 P2p`  `switch(config)#` Arista User Manual *v.* 4.14.3F (Rev. 2) (10/2/2014), at 960. *See also* Arista User Manual *v.* 4.12.3 (7/17/13), at 838; Arista User Manual, v. 4.11.1 (1/11/13), at 656; Arista User Manual *v.* 4.10.3 (10/22/12), at 570; Arista User Manual *v.* 4.9.3.2 (5/3/12), at 490; Arista User Manual *v.* 4.8.2 (11/18/11), at 364; Arista User Manual *v.* 4.7.3 (7/18/11), at 238; Arista User Manual *v.* 4.6.0 (12/22/2010), at 268.

Cisco	Arista
This example shows how to display STP information when you are running MST:	This command displays output from the show spanning-tree command:

Cisco

```
switch# show spanning-tree

MST0000
  Spanning tree enabled protocol mstp
  Root ID    Priority    32768
             Address     0018.bad8.fc150
             Cost        0
             Port        258 (Ethernet 2/2)
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32768 (priority 32768 sys-id-ext 0)
             Address     0018.bad8.239d
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

Interface       Role Sts Cost      Prio.Nbr   Type
--------------- ---- --- --------- ---------- ----
Eth2/1          Altn BKN 20000     128.257    Network, P2p   BA_Inc.
Eth2/2          Root FWD 20000     128.258    Edge, P2p
Eth3/48         Desg FWD 20000     128.43228  P2p
```

Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (Feb. 2013), at 64

Arista

```
Switch#show spanning-tree
MST0
  Spanning tree enabled protocol mstp
  Root ID    Priority    32768
             Address     0011.2201.0301
             This bridge is the root

  Bridge ID  Priority    32768  (priority 32768 sys-id-ext 0)
             Address     0011.2201.0301
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

Interface   Role     State      Cost     Prio.Nbr    Type
---------   ----     -----      ----     --------    ----
Et4                  designated forwarding  2000      128.4       P2p
Et5                  designated forwarding  2000      128.5       P2p
...
PEt4                 designated forwarding  2000      128.31      P2p
PEt5                 designated forwarding  2000      128.44      P2p
...
Po3                  designated forwarding  1999      128.1003    P2p
```

Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 983.

See also Arista User Manual v. 4.12.3 (7/17/13), at 861; Arista User Manual, v. 4.11.1 (1/11/13), at 679; Arista User Manual v. 4.10.3 (10/22/12), at 593; Arista User Manual v. 4.9.3.2 (5/3/12), at 512; Arista User Manual v. 4.8.2 (11/18/11), at 386; Arista User Manual v. 4.7.3 (7/18/11), at 275; Arista User Manual v. 4.6.0 (12/22/2010), at 295

Cisco	Arista

Cisco

```
Spanning tree enabled protocol rstp
Root ID    Priority    32770
           Address     000d.eca3.9f01
           Cost        4
           Port        4105 (port-channel10)
           Hello Time  2  sec  Max Age 20 sec  Forward Delay 15 sec

Bridge ID  Priority    32770  (priority 32768 sys-id-ext 2)
           Address     0022.5579.7641
           Hello Time  2  sec  Max Age 20 sec  Forward Delay 15 sec

Interface      Role Sts Cost      Prio.Nbr Type
-------------- ---- --- --------- -------- --------------------------------
Po10           Root FWD 2         128.4105 (vPC peer-link) P2p
Po20           Desg FWD 1         128.4115 (vPC) P2p
Po30           Root FWD 1         128.4125 (vPC) P2p
```

Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command
Reference (Feb. 2013), at 73

Arista

```
Spanning tree enabled protocol rstp
Root ID    Priority    32768
           Address     001c.7301.07b9
           Cost        1999 (Ext) 0 (Int)
           Port        101 (Port-Channel2)
           Hello Time  2.000 sec  Max Age 20 sec  Forward Delay 15 sec

Bridge ID  Priority    32768  (priority 32768 sys-id-ext 0)
           Address     001c.7304.195b
           Hello Time  2.000 sec  Max Age 20 sec  Forward Delay 15 sec

Interface   Role       State      Cost    Prio.Nbr Type
----------  ---------- ---------- ------- -------- ------
Et4         designated forwarding 20000   128.4    P2p
Et5         designated forwarding 20000   128.5    P2p
Et6         designated forwarding 20000   128.6    P2p
Et23        designated forwarding 20000   128.23   P2p
Et26        designated forwarding 20000   128.26   P2p
Et32        designated forwarding 2000    128.32   P2p
```

Arista User Manual v. 4.12.4 (9/16/2013), at 883.
Arista User Manual v. 4.13.6F (4/14/2014), at 947.
Arista User Manual v. 4.13.7M (6/17/2014), at 965.
Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 983.
Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 985.
Arista User Manual v. 4.14.6M (1/19/2015), at 981.
Arista User Manual v. 4.15.0F (4/18/2015), at 989.
Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 981.

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Arista

- This command displays STP data, including an information block for each interface running STP:

```
switch>show spanning-tree vlan 1000 detail
MST0 is executing the rstp Spanning Tree protocol
  Bridge Identifier has priority 32768, sysid 0, address 001c.7304.195b
  Configured hello time 2.000, max age 20, forward delay 15, transmit hold-count 6
  Current root has priority 32768, address 001c.7301.07b9
  Root port is 101 (Port-Channel2), cost of root path is 1999 (Ext) 0 (Int)
  Number of topology changes 4109 last change occurred 1292651 seconds ago
        from Ethernet13

Port 4 (Ethernet4) of MST0 is designated forwarding
  Port path cost 20000, Port priority 128, Port Identifier 128.4.
  Designated root has priority 32768, address 001c.7301.07b9
  Designated bridge has priority 32768, address 001c.7304.195b
  Designated port id is 128.4, designated path cost 1999 (Ext) 0 (Int)
  Timers: message age 1, forward delay 15, hold 20
  Number of transitions to forwarding state: 1
  Link type is point-to-point by default, Internal
  BPDU: sent 452252, received 0, taggedErr 0, otherErr 0, rateLimiterCount 0
  Rate-limiter: enabled, Window: 10 sec, Max-BPDU: 400

Port 5 (Ethernet5) of MST0 is designated forwarding
  Port path cost 20000, Port priority 128, Port Identifier 128.5.
  Designated root has priority 32768, address 001c.7301.07b9
  Designated bridge has priority 32768, address 001c.7304.195b
  Designated port id is 128.5, designated path cost 1999 (Ext) 0 (Int)
  Timers: message age 1, forward delay 15, hold 20
  Number of transitions to forwarding state: 1
  Link type is point-to-point by default, Internal
  BPDU: sent 106366, received 0, taggedErr 0, otherErr 0, rateLimiterCount 0
  Rate-limiter: enabled, Window: 10 sec, Max-BPDU: 400
```

Arista User Manual v. 4.12.4 (9/16/2013), at 884.
Arista User Manual v. 4.13.6F (4/14/2014), at 948.
Arista User Manual v. 4.13.7M (6/17/2014), at 966.
Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 984.
Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 986.
Arista User Manual v. 4.14.6M (1/19/2015), at 982.
Arista User Manual v. 4.15.0F (4/18/2015), at 990.
Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 982.

Cisco

This example shows how to display detailed information about the STP configuration:

```
switch(config)# show spanning-tree detail

VLAN0001 is executing the rstp compatible Spanning Tree protocol
  Bridge Identifier has priority 32768, sysid 1, address 0022.5579.7641
  Configured hello time 2, max age 20, forward delay 15
  Current root has priority 32769, address 000d.eca3.9f01
  Root port is 4105 (port-channel10), cost of root path is 4
  Topology change flag not set, detected flag not set
  Number of topology changes 1 last change occurred 20:24:36 ago
        from port-channel10
  Times:  hold 1, topology change 35, notification 2
          hello 2, max age 20, forward delay 15
  Timers: hello 0, topology change 0, notification 0

Port 4105 (port-channel10, vPC Peer-link) of VLAN0001 is root forwarding
  Port path cost 2, Port priority 128, Port Identifier 128.4105
  Designated root has priority 32769, address 000d.eca3.9f01
  Designated bridge has priority 32769, address 0022.5579.7341
  Designated port id is 128.4105, designated path cost 2
  Timers: message age 16, forward delay 0, hold 0
  Number of transitions to forwarding state: 1
  Link type is point-to-point by default

  BPDU: sent 36729, received 36739

Port 4115 (port-channel20, vPC) of VLAN0001 is designated forwarding
  Port path cost 1, Port priority 128, Port Identifier 128.4115
  Designated root has priority 3769, address 000d.eca3.9f01
  Designated bridge has priority 32769, address 0022.5579.7341
  Designated port id is 128.4115, designated path cost 2
  Timers: message age 0, forward delay 0, hold 0
  Number of transitions to forwarding state: 0
  Link type is point-to-point by default
  BPDU: sent 0, received 0

Port 4125 (port-channel30, vPC) of VLAN0001 is root forwarding
  Port path cost 1, Port priority 128, Port Identifier 128.4125
  Designated root has priority 32769, address 000d.eca3.9f01
  Designated bridge has priority 32769, address 000d.eca3.9f01
  Designated port id is 128.4125, designated path cost 0
  Timers: message age 0, forward delay 0, hold 0
  Number of transitions to forwarding state: 0
  Link type is point-to-point by default
  BPDU: sent 0, received 0
```

Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command

Cisco	Arista
Reference (Feb. 2013), at 74-75	Examples

Cisco

This example shows how to display STP information about a specified interface when you are running Rapid PVST+:

```
switch(config)# show spanning-tree interface ethernet 8/2

Vlan       Role Sts Cost      Prio.Nbr Type
---------- ---- --- --------- -------- ----
VLAN0001   Altn BLK 20000     128.1025 P2p
VLAN0002   Desg FWD 20000     128.1025 P2p
```

This example shows how to display STP information about a specified interface when you are running MST:

```
switch(config)# show spanning-tree interface ethernet 2/50

Mst Instance   Role Sts Cost      Prio.Nbr Type
-------------- ---- --- --------- -------- ----
MST0000        Desg FWD 20000     128 1281 P2p
```

This example shows how to display detailed STP information about a specified interface when you are running Rapid PVST+:

```
switch(config)# show spanning-tree interface ethernet 8/1 detail

Port 1025 (Ethernet8/1) of VLAN0001 is alternate blocking
  Port path cost 20000, Port priority 128, Port Identifier 128.1025
  Designated root has priority 28672, address 0018.bad8.239d
  Designated bridge has priority 28672, address 0018.bad8.239d
  Designated port id is 128.1281, designated path cost 0
  Timers: message age 15, forward delay 0, hold 0
  Number of transitions to forwarding state: 1
  Link type is point-to-point by default
  The port type is network by default.
  BPDU: sent 4657, received 188

Port 1025 (Ethernet8/1) of VLAN0002 is designated forwarding
  Port path cost 20000, Port priority 128, Port Identifier 128.1025
  Designated root has priority 32770, address 0018.bad7.fc15
  Designated bridge has priority 32770, address 0018.bad7.fc15
  Designated port id is 128.1025, designated path cost 0
  Timers: message age 0, forward delay 0, hold 0
  Number of transitions to forwarding state: 1
  Link type is point-to-point by default
  The port type is network by default.
  BPDU: sent 4838, received 0
```

Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (Feb. 2013), at 77.

Arista

Examples
- This command displays an STP table for Ethernet 5 interface.

```
switch>show spanning-tree interface ethernet 5
Instance    Role       State       Cost      Prio.Nbr Type
MST0        designated forwarding  20000     128 5    P2p
switch>
```

- This command displays a data block for Ethernet interface 5.

```
switch>show spanning-tree interface ethernet 5 detail
Port 5 (Ethernet5) of MST0 is designated forwarding
  Port path cost 20000, Port priority 128, Port Identifier 128.5.
  Designated root has priority 32768, address 001c.7301.07b9
  Designated bridge has priority 32768, address 001c.7304.195b
  Designated port id is 128.5, designated path cost 1999 (Ext) 0 (Int)
  Timers: message age 1, forward delay 15, hold 20
  Number of transitions to forwarding state: 1
  Link type is point-to-point by default, Internal
  BPDU: sent 1008766, received 0, taggedErr 0, otherErr 0, rateLimiterCount 0
  Rate-Limiter: enabled, Window: 10 sec, Max-BPDU: 400
switch>
```

Arista User Manual v. 4.14.3F – Rev. 2 (October 2, 2014), at 988.

See also Arista User Manual v. 4.12.3 (7/17/13), at 866; Arista User Manual, v. 4.11.1 (1/11/13), at 684; Arista User Manual v. 4.10.3 (10/22/12), at 598; Arista User Manual v. 4.9.3.2 (5/3/12), at 517; Arista User Manual v. 4.8.2 (11/18/11), at 391; Arista User Manual v. 4.7.3 (7/18/11), at 280.

Cisco

```
switch# show spanning-tree mst

##### MST0    vlans mapped:    1-4094
Bridge    address 0018.bad7.fc15   priority    32768 (32768 sysid 0)
Root      this switch for the CIST
Regional Root this switch
Operational   hello time 2 , forward delay 15, max age 20, txholdcount 6
Configured    hello time 2 , forward delay 15, max age 20, max hops   20

Interface    Role Sts Cost    Prio.Nbr Type
---------- ---- --- --------- -------- ----
Eth8/1       Desg FWD 20000   128.1025 P2p
Eth8/2       Desg FWD 20000   128.1026 P2p
```

This example shows how to display STP information about a specific MST instance:

```
switch# show spanning-tree mst 0

##### MST0    vlans mapped:    1-4094
Bridge    address 0018.bad7.fc15   priority    32768 (32768 sysid 0)
Root      this switch for the CIST
Regional Root this switch
Operational   hello time 2 , forward delay 15, max age 20, txholdcount 6
Configured    hello time 2 , forward delay 15, max age 20, max hops   20

Interface    Role Sts Cost    Prio.Nbr Type
---------- ---- --- --------- -------- ----
Eth8/1       Desg FWD 20000   128.1025 P2p
Eth8/2       Desg FWD 20000   128.1026 P2p
```

This example shows how to display detailed STP information about the MST protocol:

```
switch# show spanning-tree mst detail

##### MST0    vlans mapped:    1-4094
Bridge    address 0018.bad7.fc15   priority    32768 (32768 sysid 0)
Root      this switch for the CIST
Regional Root this switch
Operational   hello time 2 , forward delay 15, max age 20, txholdcount 6
Configured    hello time 2 , forward delay 15, max age 20, max hops   20

Eth8/1 of MST0 is designated forwarding
Port info             port id         128.1025   priority   128   cost   20000
Designated root       address 0018.bad7.fc15     priority   32768  cost   0
Design. regional root address 0018.bad7.fc15     priority   32768  cost   0
Designated bridge     address 0018.bad7.fc15     priority   32768  port id 128.1025
Timers: message expires in 0 sec, forward delay 0, forward transitions 1
Bpdus sent 1379, received 3

Eth8/2 of MST0 is designated forwarding
Port info             port id         128.1026   priority   128   cost   20000
Designated root       address 0018.bad7.fc15     priority   32768  cost   0
Design. regional root address 0018.bad7.fc15     priority   32768  cost   0
Designated bridge     address 0018.bad7.fc15     priority   32768  port id 128.1026
Timers: message expires in 0 sec, forward delay 0, forward transitions 1
Bpdus sent 1380, received 2
```

Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (Feb. 2013), at 80

Arista

Examples

• This command displays interface data blocks for MST instance 3.

```
switch>show spanning-tree mst 3 detail
##### MST3    vlans mapped:    3
Bridge    address 0011.2233.4402   priority   32771 (32768 sysid 3)
Root      address 0011.2233.4401   priority   32771 (32768 sysid 3)

Ethernet1 of MST3 is root forwarding
Port info           port id        128.1   priority   128   cost   2000
Designated root     address 0011.2233.4401   priority   32768  cost   0
Designated bridge   address 0011.2233.4401   priority   32768  port id 128.1

Ethernet2 of MST3 is alternate discarding
Port info           port id        128.2   priority   128   cost   2000
Designated root     address 0011.2233.4401   priority   32768  cost   0
Designated bridge   address 0011.2233.4401   priority   32768  port id 128.2

Ethernet3 of MST3 is designated forwarding
Port info           port id        128.3   priority   128   cost   2000
Designated root     address 0011.2233.4401   priority   32768  cost   2000
Designated bridge   address 0011.2233.4402   priority   32768  port id 128.3
```

• This command displays interface tables for all MST instances.

```
switch>show spanning-tree mst
##### MST0    vlans mapped:    1,4-4094
Bridge        address 0011.2233.4402   priority   32768 (32768 sysid 0)
Root          address 0011.2233.4401   priority   32768 (32768 sysid 0)
Regional Root address 0011.2233.4401   priority   32768 (32768 sysid 0)

Interface    Role        State       Cost    Prio.Nbr Type
---------- ----------- ----------- ------- -------- ----
Et1          root        forwarding  2000    128.1    P2p
Et2          alternate   discarding  2000    128.2    P2p
Et3          designated  forwarding  2000    128.3    P2p
Et4          designated  forwarding  2000    128.4    P2p

##### MST2 vlans mapped: 2
Bridge        address 0011.2233.4402   priority   8194 (8192 sysid 2)
Root          this switch for MST2

Interface    Role        State       Cost    Prio.Nbr Type
---------- ----------- ----------- ------- -------- ----
Et1          designated  forwarding  2000    128.1    P2p
Et2          designated  forwarding  2000    128.2    P2p
Et3          designated  forwarding  2000    128.3    P2p
Et4          designated  forwarding  2000    128.4    P2p

##### MST3 vlans mapped: 3
Bridge        address 0011.2233.4402   priority   32771 (32768 sysid 3)
Root          address 0011.2233.4401   priority   32771 (32768 sysid 3)

Interface    Role        State       Cost    Prio.Nbr Type
---------- ----------- ----------- ------- -------- ----
Et1          root        forwarding  2000    128.1    P2p
Et2          alternate   discarding  2000    128.2    P2p
Et3          designated  forwarding  2000    128.3    P2p
Et4          designated  forwarding  2000    128.4    P2p
```

Cisco	Arista

This example shows how to display information about the MST configuration:
 	
`switch)# show spanning-tree mst configuration`
 	
`Name:    [mst-bldg-sj6/3]`
`Revision: 1    Instances Configured: 3`
`Instance    Vlans mapped`
`--------    ------------`
`0           1`
`2000        2-2000`
`4094        2001-4094`
 	
This example shows how to display the MD5 digest included in the current MST configuration:
 	
`switch)# show spanning-tree mst configuration digest`
 	
`Name    [mst-config]`
`Revision 10    Instances configured 25`
`Digest    0x40D5BCA178C657835C83BBCB16723192`
`Pre-std Digest  0x27BF112A75B72781ED928D9BC5BB4251`
 	
Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (Feb. 2013), at 81.
	Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 990.
	
	See also Arista User Manual v. 4.12.3 (7/17/13), at 867-68; Arista User Manual, v. 4.11.1 (1/11/13), at 685-86; Arista User Manual v. 4.10.3 (10/22/12), at 599-600; Arista User Manual v. 4.9.3.2 (5/3/12), at 518-19; Arista User Manual v. 4.8.2 (11/18/11), at 392-393; Arista User Manual v.
	
	Examples
	• This command displays the MST region's VLAN-to-instance map.
	
	`switch>show spanning-tree mst configuration`
	`Name       []`
	`Revision   0    Instances configured  3`
	
	`Instance   Vlans mapped`
	`--------   ------------`
	`0          1,4-4094`
	`2          2`
	`3          3`
	
	`switch>`
	
	• This command displays the MST region's configuration digest.
	
	`switch>show spanning-tree mst configuration digest`
	`Name       []`
	`Revision   0    Instances configured 1`
	`Digest     0xAC36177F50283CD4B83821D8AB26DE62`
	`switch>`
	
	Arista User Manual v. 4.14.3F – Rev. 2 (October 2, 2014), at 991.
	
	See also Arista User Manual v. 4.12.3 (7/17/13), at 869; Arista User Manual, v. 4.11.1 (1/11/13), at 687; Arista User Manual v. 4.10.3 (10/22/12), at 601; Arista User Manual v. 4.9.3.2 (5/3/12), at 520; Arista User Manual v. 4.8.2 (11/18/11), at 394; Arista User Manual v. 4.7.3 (7/18/11), at 283.

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Cisco

Examples

- This example shows how to display information for the root bridge:

```
switch(config)# show spanning-tree root

                                        Root
MST Instance    Root ID             Cost  Time  Age  Dly  Root Port
------------    ------------------  ----  ----  ---  ---  ----------
MST0000         32768 0018.bad7.fc15  0     2    20   15   This bridge is root
```

Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (Feb. 2013), at 82-83.

```
switch# show vlan summary

Number of existing VLANs          : 9
Number of existing user VLANs     : 9
Number of existing extended VLANs : 0
```

Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (Feb. 2013), at 94.

Arista

Examples

- This command displays a table of root bridge information.

```
switch>show spanning-tree root

                      Root ID               Root  Hello Max  Fwd
Instance    Priority  MAC addr        Cost  Time  Age  Dly  Root Port
--------    --------  --------------  ----  ----  ---  ---  ---------
MST0        32768 001c.7301.23de      0     2    20   15   Po937
MST101      32869 001c.7301.23de      3998  0    0    0    Po909
MST102      32870 001c.7301.23de      3998  0    0    0    Po911
switch>
```

Arista User Manual v. 4.12.4 (9/16/2013), at 894.
Arista User Manual v. 4.13.6F (4/14/2014), at 958.
Arista User Manual v. 4.13.7M (6/17/2014), at 976.
Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 994.
Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 996.
Arista User Manual v. 4.14.6M (1/19/2015), at 992.
Arista User Manual v. 4.15.0F (4/18/2015), at 1000.
Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 992.

Example

- This command displays the number of VLANs on the switch.

```
switch>show vlan summary
Number of existing VLANs          : 18

switch>
```

Arista User Manual v. 4.12.4 (9/16/2013), at 658.
Arista User Manual v. 4.13.6F (4/14/2014), at 766.
Arista User Manual v. 4.13.7M (6/17/2014), at 784.
Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 791.
Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 793.
Arista User Manual v. 4.14.6M (1/19/2015), at 789.
Arista User Manual v. 4.15.0F (4/18/2015), at 797.

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	Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 789.

Cisco (first cell):

Examples

This example shows how to display information about all private VLANs on the device:

```
switch(config)# show vlan private-vlan
Primary   Secondary   Type        Ports
----------------------------------------------
200       201         isolated    Eth2/26, Eth2/27
200       202         community   Eth2/26, Eth2/28
```

Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (Feb. 2013), at 100.

Arista (first cell):

Example

- This command displays the private VLANs.

```
switch>show vlan private-vlan
Primary   Secondary   Type        Ports
--------------------------------------
5         25          isolated
5         26          isolated
7         31          community
7         32          isolated
switch>
```

Arista User Manual v. 4.12.4 (9/16/2013), at 657.
Arista User Manual v. 4.13.6F (4/14/2014), at 765.
Arista User Manual v. 4.13.7M (6/17/2014), at 783.
Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 790.
Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 792.
Arista User Manual v. 4.14.6M (1/19/2015), at 788.
Arista User Manual v. 4.15.0F (4/18/2015), at 796.
Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 788.

Cisco (second cell):

```
BGP table version is 10, local router ID is 3.3.3.3
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid >-best
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist
Origin codes: i – IGP, e – EGP, ? – incomplete | – multipath

Network            Next Hop      Metric   LocPrf   Weight Path
* i200.0.1.100/32  201.0.25.1             100       100 6553601 i
*>e                201.0.13.1                          0 6553601 i
* i200.0.2.100/32  201.0.25.1             100       100 6553601 i
*>e                201.0.13.1                          0 6553601 i
*>1200.0.3.100/32  0.0.0.0                          32768 i
```

Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (August 2013), at 401.

Arista (second cell):

```
switch>show ip bgp neighbors 10.14.4.4 advertised-routes regexp _64502_
BGP routing table information for VRF default
Router identifier 172.24.78.191, local AS number 64498
Route status codes: s – suppressed, * – valid, > – active, E – ECMP head, e – ECMP
                    S – Stale
Origin codes: i – IGP, e – EGP, ? – incomplete
AS Path Attributes: Or-ID – Originator ID, C-LST – Cluster List, LL Nexthop – Link
Local Nexthop

Network          Next Hop      Metric   LocPref   Weight Path
* > 10.99.31.0/24   10.88.202.1   333       100    -     (64502 64503) 99 i
* > 10.99.41.0/24   10.88.202.1   333       100    -     (64502 64503) 99 i
* > 10.99.99.0/24   10.88.202.1   333       100    -     (64502 64504) 99 i
```

Arista User Manual v. 4.13.6F (4/14/2014), at 1587.
Arista User Manual v. 4.13.7M (6/17/2014), at 1605.
Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1637.

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This example shows how to display information about IGMP snooping queriers:
 	
`switch(config)# show ip igmp snooping querier`
`Vlan  IP Address     Version  Port`
`1     172.20.50.11   v3       fa2/1`
`2     172.20.40.20   v2       Router`
`switch(config)#`
 	
Cisco Nexus 7000 Series NX-OS Multicast Routing Command Reference (August 2013), at 50.
	Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1651.
	Arista User Manual v. 4.14.6M (1/19/2015), at 1647.
	Arista User Manual v. 4.15.0F (4/18/2015), at 1655.
	Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1649.
	
	Example
	• This command displays the querier IP address, version, and port servicing each VLAN.
	
	`switch>show ip igmp snooping querier`
	`Vlan  IP Address       Version  Port`
	`1     172.17.0.37      v2       Po1`
	`20    172.17.20.1      v2       Po1`
	`26    172.17.26.1      v2       Cpu`
	`2028  172.17.255.29    v2       Po1`
	`switch>`
	
	Arista User Manual v. 4.12.4 (9/16/2013), at 1560.
	Arista User Manual v. 4.13.6F (4/14/2014), at 1790.
	Arista User Manual v. 4.13.7M (6/17/2014), at 1755.
	Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1860.
	Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1874.
	Arista User Manual v. 4.14.6M (1/19/2015), at 1870.
	Arista User Manual v. 4.15.0F (4/18/2015), at 1878.
	Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1872.

Examples
This example shows how to use the show port-security command to view the status of the port security feature on a device:
 	
`switch# show port-security`
`Total Secured Mac Addresses in System (excluding one mac per port)    : 0`
`Max Addresses limit in System (excluding one mac per port) : 8192`
`Secure Port  MaxSecureAddr  CurrentAddr  SecurityViolation  Security Action`
`             (Count)        (Count)      (Count)`
`Ethernet1/4  5              1            0                  shutdown`
`switch#`
 	
Cisco Nexus 7000 Series NX-OS Security Command Reference (August 2013), at SEC-661.
	`switch(config)#clear mac address-table dynamic interface ethernet 7`
	`switch(config)#show port-security`
	`Secure Port  MaxSecureAddr  CurrentAddr  SecurityViolation  Security Action`
	`             (Count)        (Count)      (Count)`
	`Et7          2              2            0                  Shutdown`
	
	`Total Addresses in System: 1`
	`switch(config)#show port-security address`
	`               Secure Mac Address Table`
	`Vlan  Mac Address     Type              Ports  Remaining Age`
	`                                               (mins)`
	`10    0034.24c2.8f11  SecureConfigured  Et7    N/A`
	`10    4464.842d.17ce  SecureConfigured  Et7    N/A`
	`Total Mac Addresses for this criterion: 2`
	`switch(config)#`

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Examples This example shows how to use the show port-security address command to view information about all MAC addresses secured by port security:
 	
`switch# show port-security address`
 	
``
Total Secured Mac Addresses in System (excluding one mac per port)   : 0
Max Addresses limit in System (excluding one mac per port) : 8192
 	
          Secure Mac Address Table
--- 	
Vlan   Mac Address   Type   Ports   Remaining Age
                                              (mins)
--- 	
  1   0054.AAB3.770F   STATIC   port-channel1   0
  1   00EE.378A.ABCE   STATIC   Ethernet1/4   0
===
switch#
``
 	
This example shows how to use the show port-security address command to view the MAC addresses secured by the port security feature on the Ethernet 1/4 interface:
 	
`switch# show port-security address interface ethernet 1/4`
 	
``
          Secure Mac Address Table
--- 	
Vlan   Mac Address   Type   Ports   Remaining Age
                                              (mins)
--- 	
  1   00EE.378A.ABCE   STATIC   Ethernet1/4   0
===
switch#
``
 	
Cisco Nexus 7000 Series NX-OS Security Command Reference (August 2013), at SEC-664.
	Arista User Manual v. 4.12.4 (9/16/2013), at 520.
	Arista User Manual v. 4.13.6F (4/14/2014), at 624.
	Arista User Manual v. 4.13.7M (6/17/2014), at 624.
	Arista User Manual v. 4.14.3F – Rev. 2 (October 2, 2014), at 632.
	Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 634.
	Arista User Manual v. 4.14.6M (1/19/2015), at 630.
	Arista User Manual v. 4.15.0F (4/18/2015), at 638.
	Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 630.
	
	``
	switch>show port-security address
	         Secure Mac Address Table
	--- 	
	Vlan Mac Address Type Ports Remaining Age
	                                                   (mins)
	--- 	
	 10 164f.29ae.4e14 SecureConfigured Et7 N/A
	 10 164f.29ae.4f11 SecureConfigured Et7 N/A
	 10 164f.320a.3a11 SecureConfigured Et7 N/A
	--- 	
	Total Mac Addresses for this criterion: 3
	switch>
	``
	
	Arista User Manual v. 4.12.4 (9/16/2013), at 581.
	Arista User Manual v. 4.13.6F (4/14/2014), at 686.
	Arista User Manual v. 4.13.7M (6/17/2014), at 690.
	Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 698.
	Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 700.
	Arista User Manual v. 4.14.6M (1/19/2015), at 696.
	Arista User Manual v. 4.15.0F (4/18/2015), at 704.
	Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 696.

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Examples

This example shows how to display the EEE status on an interface:

```
switch# show interface ethernet2/6
Ethernet2/6 is down (Link not connected)
admin state is up, Dedicated Interface
  Hardware: 10000 Ethernet, address: 0022.5579.de41 (bia 001b.54c1.af5d)
  MTU 1500 bytes, BW 10000000 Kbit, DLY 10 usec
  reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, medium is broadcast
  auto-duplex, auto-speed, media type is 10G
  Beacon is turned off
  Auto-Negotiation is turned off
  Input flow-control is off, output flow-control is off
  Auto-mdix is turned off
  Rate mode is shared
  Switchport monitor is off
  EtherType is 0x8100
  EEE (efficient-ethernet) : n/a
  Last link flapped never
  Last clearing of "show interface" counters never
  0 interface resets
  30 seconds input rate 0 bits/sec, 0 packets/sec
  30 seconds output rate 0 bits/sec, 0 packets/sec
  Load-Interval #2: 5 minute (300 seconds)
```

Cisco Nexus 7000 Series NX-OS System Management Command Reference (August 2013), at 514.

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```
switch(config)#interface ethernet 7
switch(config-if-Et7)#mac-address 001c.2804.17e1
switch(config-if-Et7)#show interface ethernet 7
Ethernet3 is up, line protocol is up (connected)
  Hardware is Ethernet, address is 001c.2804.17e1 (bia 001c.7312.02e2)
  Description: b.e45
  MTU 9212 bytes, BW 10000000 Kbit
  Full-duplex, 10Gb/s, auto negotiation: off
  Last clearing of "show interface" counters never
  5 seconds input rate 7.84 kbps (0.0% with framing), 10 packets/sec
  5 seconds output rate 270 kbps (0.0% with framing), 24 packets/sec
  1363799 packets input, 222736140 bytes
  Received 0 broadcasts, 290904 multicast
  0 runts, 0 giants
  0 input errors, 0 CRC, 0 alignment, 0 symbol
  0 PAUSE input
  2264927 packets output, 2348747214 bytes
  Sent 0 broadcasts, 28573 multicast
  0 output errors, 0 collisions
  0 late collision, 0 deferred
  0 PAUSE output
switch(config-if-Et7)#
```

Arista User Manual v. 4.12.4 (9/16/2013), at 390.
Arista User Manual v. 4.13.6F (4/14/2014), at 429.
Arista User Manual v. 4.13.7M (6/17/2014), at 429.
Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 437.
Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 439.
Arista User Manual v. 4.14.6M (1/19/2015), at 435.
Arista User Manual v. 4.15.0F (4/18/2015), at 443.
Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 435.

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Examples This example shows how to display the PTP clock information:
 	
`switch# show ptp clock`
`PTP Device Type: Boundary clock`
`Clock Identity : 0:18:ba:ff:ff:d8: e:17`
`Clock Domain: 0`
`Number of PTP ports: 2`
`Priority1 : 255`
`Priority2 : 255`
`Clock Quality:`
`  Class : 248`
`  Accuracy : 254`
`  Offset (log variance) : 65535`
`Offset From Master : 0`
`Mean Path Delay : 0`
`Steps removed : 1`
`Local clock time:Sun Jan 15 20:57:29 2011`
	`switch#show ptp clock`
	`PTP Mode: Boundary Clock`
	`Clock Identity: 0x00:1c:73:ff:ff:1e:83:24`
	`Clock Domain: 1`
	`Number of PTP ports: 24`
	`Priority1: 128`
	`Priority2: 128`
	`Clock Quality:`
	`  Class: 248`
	`  Accuracy: 0x30`
	`  OffsetScaledLogVariance: 0xffff`
	`Offset From Master: 0`
	`Mean Path Delay: 0`
	`Steps Removed: 0`
	`switch#`

Cisco Nexus 7000 Series NX-OS System Management Command Reference (August 2013), at 601.	Arista User Manual v. 4.12.4 (9/16/2013), at 233. Arista User Manual v. 4.13.6F (4/14/2014), at 267. Arista User Manual v. 4.13.7M (6/17/2014), at 267. Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 275. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 277. Arista User Manual v. 4.14.6M (1/19/2015), at 273. Arista User Manual v. 4.15.0F (4/18/2015), at 257. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 257.

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Cisco

Examples — This example shows how to display information about the parent and grand n

```
switch# show ptp parent
Parent Clock:
Parent Clock Identity:    0:18:ba:ff:ff:d8: e:16
Parent Port Number: 1546
Observed Parent Offset (log variance): N/A
Observed Parent Clock Phase Change Rate: N/A

Grandmaster Clock:
Grandmaster Clock Identity:    0:18:ba:ff:ff:d8: e:16
Grandmaster Clock quality:
  Class: 248
  Accuracy: 254
  Offset (log variance): 65535
  Priority1: 255
  Priority2: 255
```

Cisco Nexus 7000 Series NX-OS System Management Command Reference (August 2013), at 607.

Examples — This example shows how to display the PTP clock properties:

```
switch# show ptp time-property
PTP CLOCK_TIME_PROPERTY:
  Current UTC offset valid: 0
  Current UTC offset: 33
  Leap59: 0
  Leap61: 0
  Time Traceable: 0
  Frequency Traceable: 0
  PTP Timescale: 0
  Time Source: 0xA0 (internal oscillator)
```

Cisco Nexus 7000 Series NX-OS System Management Command

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Precision Time Protocol (PTP) clock...

```
switch# show ptp parent
Parent Clock:
Parent Clock Identity: 0x00:1c:73:ff:ff:00:72:40
Parent Port Number: 0
Parent IP Address: N/A
Observed Parent Offset (log variance): N/A
Observed Parent Clock Phase Change Rate: N/A

Grandmaster Clock:
Grandmaster Clock Identity: 0x00:1c:73:ff:ff:00:72:40
Grandmaster Clock Quality:
  Class: 248
  Accuracy: 0x30
  OffsetScaledLogVariance: 0xffff
  Priority1  128
  Priority2  128
switch#
```

Arista User Manual v. 4.12.4 (9/16/2013), at 233-234.
Arista User Manual v. 4.13.6F (4/14/2014), at 267.
Arista User Manual v. 4.13.7M (6/17/2014), at 267.
Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 275.
Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 277.
Arista User Manual v. 4.14.6M (1/19/2015), at 273.
Arista User Manual v. 4.15.0F (4/18/2015), at 257.
Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 257.

• The show ptp time-property command displays the Precision Time Protocol (PTP) clock properties.

```
switch# show ptp time-property
Current UTC offset valid: False
Current UTC offset: 0
Leap 59: False
Leap 61: False
Time Traceable: False
Frequency Traceable: False
PTP Timescale: False
Time Source: 0x0
switch#
```

Arista User Manual v. 4.12.4 (9/16/2013), at 234.
Arista User Manual v. 4.13.6F (4/14/2014), at 267-268.

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Reference (August 2013), at 611.	Arista User Manual v. 4.13.7M (6/17/2014), at 267-268. Arista User Manual v. 4.14.3F – Rev. 2 (October 2, 2014), at 275-76. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 277. Arista User Manual v. 4.14.6M (1/19/2015), at 273. Arista User Manual v. 4.15.0F (4/18/2015), at 257. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 257.

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Examples This example shows how to display the SNMP information:

```
switch(config)# show snmp
sys contact:
sys location: anyplace, Anywhere

0 SNMP packets input
  0 Bad SNMP versions
  0 Unknown community name
  0 Illegal operation for community name supplied
  0 Encoding errors
  0 Number of requested variables
  0 Number of altered variables
  0 Get-request PDUs
  0 Get-next PDUs
  0 Set-request PDUs
0 SNMP packets output
  0 Too big errors
  0 No such name errors
  0 Bad values errors
  0 General errors
```

Cisco Nexus 7000 Series NX-OS System Management Command Reference (August 2013), at 634.

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```
switch(config)#snmp-server chassis-id xyz-1234
switch(config)#show snmp
   Chassis: xyz-1234    <---chassis ID

8 SNMP packets input
  0 Bad SNMP version errors
  0 Unknown community name
  0 Illegal operation for community name supplied
  0 Encoding errors
  8 Number of requested variables
  0 Number of altered variables
  4 Get-request PDUs
  4 Get-next PDUs
  0 Set-request PDUs
21 SNMP packets output
  0 Too big errors
  0 No such name errors
  0 Bad value errors
  0 General errors
  8 Response PDUs
  0 Trap PDUs
SNMP logging: enabled
  Logging to taccon.162
SNMP agent enabled
switch(config)#
```

Arista User Manual v. 4.12.4 (9/16/2013), at 1705-1706.
Arista User Manual v. 4.13.6F (4/14/2014), at 1895-1896.
Arista User Manual v. 4.13.7M (6/17/2014), at 1923-1924.
Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1967-68.
Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1981-1982.

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Examples — This example shows how to display the SNMP engine ID:
 	
`switch(config)# show snmp engineID`
`Local SNMP engineID: [Hex] 8000000903005300A080C`
`[Dec] 128:000:000:009:003:000:005:048:010:011:012`
 	
Cisco Nexus 7000 Series NX-OS System Management Command Reference, Release 5.x (April 2010), at 533.
	Arista User Manual v. 4.14.6M (1/19/2015), at 1977-1978.
	Arista User Manual v. 4.15.0F (4/18/2015), at 1985-1986
	Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1979-1980.
	
	• This command displays the ID of the local SNMP engine.
	
	`switch>show snmp engineid`
	`Local SNMP EngineID: f5717f001c730436d700`
	`switch>`
	
	Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 1363.
	Arista User Manual v. 4.11.2.1 (3/1/2013), at 1443.
	Arista User Manual v. 4.12.4 (9/16/2013), at 1716.
	Arista User Manual v. 4.13.6F (4/14/2014), at 1906.
	Arista User Manual v. 4.13.7M (6/17/2014), at 1934.
	Arista User Manual v. 4.14.3F – Rev. 2 (October 2, 2014), at 1978.
	Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1991.
	Arista User Manual v. 4.14.6M (1/19/2015), at 1987.
	Arista User Manual v. 4.15.0F (4/18/2015), at 1995.
	Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1989.

Switch(config)#help Help may be requested at any point in a command by entering a question mark '?'. If nothing matches, the help list will be empty and you must backup until entering a '?' shows the available options. Two styles of help are provided: Full help is available when you are ready to enter a command argument (e.g. 'show ?') and describes each possible argument Partial help is provided when an abbreviated argument is entered	localhost(config)#help Help may be requested at any point in a command by entering a question mark '?'. If nothing matches, the help list will be empty and you must backup until entering a '?' shows the available options. Two styles of help are provided: 1. Full help is available when you are ready to enter a command argument (e.g. 'show ?') and describes each possible argument. Partial help is provided when an abbreviated argument is entered and

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and you want to know what arguments match the input (e.g. 'show	you want to know what arguments match the input (e.g. 'show pr?'.)

Switch#show snmp
  0 SNMP packets input
  0 Bad SNMP version errors
  0 Unknown community name
  0 Illegal operation for community name supplied
  0 Encoding errors
  0 Number of requested variables
  0 Number of altered variables
  0 Get-request PDUs
  0 Get-next PDUs
  0 Set-request PDUs
  0 Input queue packet drops (Maximum queue size 1000)
  0 SNMP packets output
  0 Too big errors (Maximum packet size 1500)
  0 No such name errors
  0 Bad values errors
  0 General errors
  0 Response PDUs
  0 Trap PDUs
Chassis: CAT1552S66E
SNMP global trap: disabled
SNMP agent enabled
	localhost#show snmp
	Chassis: HSH16130550
	0 SNMP packets input
	  0 Bad SNMP version errors
	  0 Unknown community name
	  0 Illegal operation for community name supplied
	  0 Encoding errors
	  0 Number of requested variables
	  0 Number of altered variables
	  0 Get-request PDUs
	  0 Get-next PDUs
	  0 Set-request PDUs
	0 SNMP packets output
	  0 Too big errors
	  0 No such name errors
	  0 Bad value errors
	  0 General errors
	  0 Response PDUs
	  0 Trap PDUs
	Access Control
	  0 Users
	  1 Groups
	  0 Views
	SNMP logging: disabled
	SNMP agent enabled in VRFs: default
	1 warnings
	! Group "tech-sup" of user "tech-1" is not configured

Switch#show ip route Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area	localhost#show ip route Codes: C - connected, S - static, K - kernel, O - OSPF, IA - OSPF inter area, E1 - OSPF external type 1,

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N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2 E1 - OSPF external type 1, E2 - OSPF external type 2 i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2 ia - IS-IS inter area, * - candidate default, U - per-user static route o - ODR, P - periodic downloaded static route Gateway of last resort is not set	E2 - OSPF external type 2, N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2, B I - iBGP, B E - eBGP, R - RIP, I - ISIS, A B - BGP Aggregate, A O - OSPF Summary, NG - Nexthop Group Static Route Gateway of last resort is not set
Switch#show ip route Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2 E1 - OSPF external type 1, E2 - OSPF external type 2 i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2 ia - IS-IS inter area, * - candidate default, U - per-user static route o - ODR, P - periodic downloaded static route Gateway of last resort is not set	localhost#show ip route Codes: C - connected, S - static, K - kernel, O - OSPF, IA - OSPF inter area, E1 - OSPF external type 1, E2 - OSPF external type 2, N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2, B I - iBGP, B E - eBGP, R - RIP, I - ISIS, A B - BGP Aggregate, A O - OSPF Summary, NG - Nexthop Group Static Route Gateway of last resort is not set
Switch#show ip igmp snooping Global IGMP Snooping configuration: IGMP snooping : Enabled IGMPv3 snooping : Enabled Report suppression : Enabled TCN solicit query : Disabled TCN flood query count : 2 Last Member Query Interval : 1000 Vlan 1: -------- IGMP snooping : Enabled CAPWAP enabled : Disabled IGMPv2 immediate leave : Disabled	localhost#show ip igmp snooping Global IGMP Snooping configuration: IGMP snooping : Enabled Robustness variable : 2 Report flooding : Disabled Vlan 1 : -------- IGMP snooping : Enabled IGMPv2 immediate leave : Enabled Multicast router learning mode : pim-dvmrp IGMP max group limit : No limit set Recent attempt to exceed limit : No

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Cisco	Arista
Explicit host tracking : Enabled	Report flooding : Disabled
Multicast router learning mode : pim-dvmrp	IGMP snooping pruning active : False
CGMP interoperability mode : IGMP_ONLY	Flooding traffic to VLAN : True
Last Member Query Interval : 1000	
Switch#show interfaces FastEthernet 1	localhost#show interface ethernet 1
FastEthernet1 is down, line protocol is down	Ethernet1 is down, line protocol is down (notconnect)
Hardware is Fast Ethernet for out of band management, address	Hardware is Ethernet, address is 444c.a88f.f7fa (bia 444c.a88f.f7fa)
is c464.1342.efbf (bia c464.1342.efbf)	Ethernet MTU 9214 bytes
Internet address is 10.1.1.35/24	Auto-duplex, Auto-speed, auto negotiation: on, uni-link: unknown
MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,	Down 35 seconds
reliability 255/255, txload 1/255, rxload 1/255	2 link status changes since last clear
Encapsulation ARPA, loopback not set	Last clearing of "show interface" counters never
Keepalive set (10 sec)	5 minutes input rate 0 bps (- with framing overhead), 0 packets/sec
Unknown duplex, Unknown Speed, 100BaseTX/FX	5 minutes output rate 0 bps (- with framing overhead), 0 packets/sec
ARP type: ARPA, ARP Timeout 04:00:00	0 packets input, 0 bytes
Last input never, output never, output hang never	Received 0 broadcasts, 0 multicast
Last clearing of "show interface" counters never	0 runts, 0 giants
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops:	0 input errors, 0 CRC, 0 alignment, 0 symbol, 0 input discards
0	0 PAUSE input
Queueing strategy: fifo	0 packets output, 0 bytes
Output queue: 0/40 (size/max)	Sent 0 broadcasts, 0 multicast
5 minute input rate 0 bits/sec, 0 packets/sec	0 output errors, 0 collisions
5 minute output rate 0 bits/sec, 0 packets/sec	0 late collision, 0 deferred, 0 output discards
0 packets input, 0 bytes	0 PAUSE output
Received 0 broadcasts (0 IP multicasts)	
0 runts, 0 giants, 0 throttles	
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored	
0 watchdog	
0 input packets with dribble condition detected	
0 packets output, 0 bytes, 0 underruns	
0 output errors, 0 collisions, 2 interface resets	
0 babbles, 0 late collision, 0 deferred	

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Cisco	Arista
0 lost carrier, 0 no carrier 0 output buffer failures, 0 output buffers swapped out	

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Cisco IOS Release 12.0 Wide-Area Networking Configuration Guide	CSI-CLI-00479964	CSI-CLI-00480193	1165
Cisco IOS Release 12.0 Wide-Area Networking Command Reference	CSI-CLI-00480194	CSI-CLI-00480567	1166
Cisco IOS Software System Error Messages	CSI-CLI-00481882	CSI-CLI-00482721	1245

IOS 12.1

DESCRIPTION	BEG BATES	END BATES	Ex. No.
IOS 12.1 Copyright Application	CSI-CLI-00356512	CSI-CLI-00356515	3023
IOS 12.1 Supplemental Copyright Application	CSI-CLI-00356490	CSI-CLI-00356495	3024
IOS 12.1: Source Code & Deposit Documentation Link	CSI-CLI-00403870	CSI-CLI-00403870	1167
IOS 12.1: Source Code	CSI-CLI-04588084	CSI-CLI-04588138	1168
Cisco 800 Series Routers Release Notes	CSI-CLI-00440303	CSI-CLI-00440544	1169
Cisco 1000 Series Routers Release Notes	CSI-CLI-00544993	CSI-CLI-00545011	1170
Cisco 1400 Series Routers Release Notes	CSI-CLI-00545012	CSI-CLI-00545034	1171
Cisco 1600 Series Routers Release Notes	CSI-CLI-00545035	CSI-CLI-00545085	1172
Cisco 1700 Series Routers Release Notes	CSI-CLI-00545086	CSI-CLI-00545253	1173
Cisco 2500 Series Routers Release Notes	CSI-CLI-00545811	CSI-CLI-00545862	1174
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DESCRIPTION	BEG BATES	END BATES	Ex. No.
Release Notes for Cisco 4000 Series for Cisco IOS Release 12.1 T	CSI-CLI-00541732	CSI-CLI-00541762	1177
Cisco 7000 Family Routers Release Notes	CSI-CLI-00547884	CSI-CLI-00548269	1178
Cisco IOS Apollo Domain, VINES, DECnet, ISO CLNS, and XNS Configuration Guide, Release 12.1	CSI-CLI-00564033	CSI-CLI-00564239	1179
Cisco IOS Apollo Domain, VINES, DECnet, ISO CLNS, and XNS Command Reference, Release 12.1	CSI-CLI-00564240	CSI-CLI-00564651	1180
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Cisco AS5300 Universal Access Servers Release Notes	CSI-CLI-00547096	CSI-CLI-00547222	1182
Cisco AS5350 Universal Gateway Release Notes	CSI-CLI-00547223	CSI-CLI-00547276	1183
Cisco AS5400 Universal Gateway Release Notes	CSI-CLI-00547277	CSI-CLI-00547346	1184
Cisco AS5800 Universal Access Server Release Notes	CSI-CLI-00547347	CSI-CLI-00547558	1185
Release Notes for Cisco AS5850 Universal Gateway for Cisco IOS Release 12.1 XV	CSI-CLI-00541781	CSI-CLI-00541804	1186
Cisco IOS AppleTalk and Novell IPX Configuration Guide, Release 12.1	CSI-CLI-00564652	CSI-CLI-00564923	1187
Cisco IOS AppleTalk and Novell IPX Command Reference, Release 12.1	CSI-CLI-00564924	CSI-CLI-00565422	1188
Cisco IOS Bridging and IBM Networking Configuration Guide, Release 12.1	CSI-CLI-00565423	CSI-CLI-00566281	1189
Cisco IOS Bridging and IBM Networking Command Reference, Release 12.1, Vol. 1	CSI-CLI-00566282	CSI-CLI-00566895	1190
Cisco IOS Bridging and IBM Networking Command Reference, Release 12.1, Vol. 2	CSI-CLI-00566896	CSI-CLI-00567265	1191
Catalyst 4224 Access Gateway Switch Release Notes	CSI-CLI-00546900	CSI-CLI-00547095	1192
Caveats for Cisco IOS Releases 12.1 & 12.1 T	CSI-CLI-00501037	CSI-CLI-00501554	1193
Cisco IOS Configuration Fundamentals Configuration Guide, Release 12.1	CSI-CLI-00567266	CSI-CLI-00567827	1194
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Cisco Cross Platform Release Notes for IOS 12.1	CSI-CLI-00439416	CSI-CLI-00439702	1196
Cisco CVA120 Series Cable Voice Adapters Release Notes	CSI-CLI-00440197	CSI-CLI-00440232	1197
Cisco IOS Debug Command Reference	CSI-CLI-00503895	CSI-CLI-00504771	1198
Cisco IOS Dial Services Configuration Guide: Network Services, Release 12.1	CSI-CLI-00568702	CSI-CLI-00569129	1199
Cisco IOS Dial Services Configuration Guide: Terminal Services, Release 12.1	CSI-CLI-00569130	CSI-CLI-00569830	1200
Cisco IOS Dial Services Quick Configuration Guide	CSI-CLI-00505848	CSI-CLI-00505959	1201
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Cisco Gatekeeper External Interface Reference, Version 2	CSI-CLI-00506081	CSI-CLI-00506200	1204
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Cisco Integrated Communications System 7750 Release Notes	CSI-CLI-00548816	CSI-CLI-00548877	1208
Release Notes for Cisco IGX 8400 Series URM for Cisco IOS Release 12.1 YA	CSI-CLI-00541805	CSI-CLI-00541840	1209
Cisco IOS Command Summary, Volume 1	CSI-CLI-00501555	CSI-CLI-00502800	1210
Cisco IOS Command Summary, Volume 2	CSI-CLI-00502801	CSI-CLI-00503894	1211
Cisco IOS IP and IP Routing Configuration Guide, Release 12.1	CSI-CLI-00571578	CSI-CLI-00572145	1212
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Cisco IOS Multiservice Applications Configuration Guide, Release 12.1	CSI-CLI-00572146	CSI-CLI-00572955	1214
Cisco IOS Multiservice Applications Command Reference, Release 12.1	CSI-CLI-00572956	CSI-CLI-00573637	1215
Cisco MC3810 Multiservice Access Concentrator Release Notes	CSI-CLI-00546666	CSI-CLI-00546899	1216
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New Features in Release 12.1(2)T	CSI-CLI-00492448	CSI-CLI-00493514	1229
New Features in Release 12.1(3)T	CSI-CLI-00495693	CSI-CLI-00497138	1230
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Release Notes - Caveats for Cisco IOS Release 12.1	CSI-CLI-00438898	CSI-CLI-00439415	1236

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Cisco IOS Security Configuration Guide, Release 12.1	CSI-CLI-00574183	CSI-CLI-00574810	1238
Cisco IOS Security Command Reference, Release 12.1	CSI-CLI-00574811	CSI-CLI-00575277	1239
System Error Messages for 12.1 T	CSI-CLI-00483404	CSI-CLI-00483632	1240
Session Initiation Protocol Gateway Call Flows	CSI-CLI-00506201	CSI-CLI-00506283	1241
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Cisco uBR900 Series Cable Access Routers Release Notes	CSI-CLI-00440545	CSI-CLI-00441050	1249
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Cisco IOS Wide-Area Networking Command Reference, Release 12.1	CSI-CLI-00576115	CSI-CLI-00576641	1251

IOS 12.2

DESCRIPTION	BEG BATES	END BATES	Ex. No.
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IOS 12.2: Source Code	CSI-CLI-04587809	CSI-CLI-04587867	1253
Release Notes for Cisco IOS Release 12.2	CSI-CLI-00549276	CSI-CLI-00549844	1254
Cisco IOS Release 12.2T Release Notes	CSI-CLI-00549845	CSI-CLI-00550439	1255
Cisco 1700 Series Routers Release Notes	CSI-CLI-00550440	CSI-CLI-00550696	1256
Release Notes for Cisco IAD 2420 Integrated Access Devices for Cisco IOS Release 12.2 XB	CSI-CLI-00550697	CSI-CLI-00550737	1257
Release Notes for Cisco 2600 Series for Cisco IOS Release 12.2 XA	CSI-CLI-00550738	CSI-CLI-00550915	1258
Release Notes for Cisco 3600 Series for Cisco IOS Release 12.2 XA	CSI-CLI-00550916	CSI-CLI-00551112	1259
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Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Configuration Guide, Release 12.2	CSI-CLI-00576954	CSI-CLI-00577169	1261
Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Command Reference, Release 12.2	CSI-CLI-00581044	CSI-CLI-00581514	1262
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Cisco IOS Bridging and IBM Networking Command Reference, Part 2, Release 12.2	CSI-CLI-00504772	CSI-CLI-00505259	1267
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Cisco IOS Command Summary, Vol. 1	CSI-CLI-00595189	CSI-CLI-00596212	1269
Cisco IOS Command Summary, Vol. 2	CSI-CLI-00596213	CSI-CLI-00597334	1270
Cisco IOS Command Summary, Vol. 3	CSI-CLI-00597335	CSI-CLI-00598280	1271
Cisco IOS Configuration Fundamentals Configuration Guide, Release 12.2	CSI-CLI-00505266	CSI-CLI-00505846	1272
Cisco IOS Configuration Fundamentals Command Reference, Release 12.2	CSI-CLI-00583938	CSI-CLI-00584812	1273
Cisco IOS Debug Command Reference	CSI-CLI-00598281	CSI-CLI-00599325	1274
Cisco IOS Dial Technologies Configuration Guide, Terminal Services, Release 12.2	CSI-CLI-00605984	CSI-CLI-00607049	1275
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Feature Pack Release Notes IOS 12.2	CSI-CLI-00548878	CSI-CLI-00548903	1277
Gatekeeper External Interface Reference, Version 3	CSI-CLI-00600424	CSI-CLI-00600550	1278
Gatekeeper External Interface Reference, Version 3.1	CSI-CLI-00600279	CSI-CLI-00600423	1279
Cisco IOS Interface Configuration Guide, Release 12.2	CSI-CLI-00585848	CSI-CLI-00586125	1280
Cisco IOS Interface Command Reference, Release 12.2	CSI-CLI-00586126	CSI-CLI-00586723	1281
Index of New Features in Cisco IOS Release 12.2	CSI-CLI-00441781	CSI-CLI-00441787	1283
Cisco IOS IP Command Reference; Addressing & Services, Vol. 1, Release 12.2	CSI-CLI-00586724	CSI-CLI-00587133	1284
Cisco IOS IP Configuration Guide	CSI-CLI-00506290	CSI-CLI-00506949	1285
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DESCRIPTION	BEG BATES	END BATES	Ex. No.
Cisco IOS Mobile Wireless Configuration Guide, Release 12.2	CSI-CLI-00587986	CSI-CLI-00588087	1290
Cisco IOS Mobile Wireless Command Reference, Release 12.2	CSI-CLI-00588088	CSI-CLI-00588232	1291
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New Features in Release 12.2(4)T	CSI-CLI-00578589	CSI-CLI-00581043	1294
New Features in Release 12.2(8)T	CSI-CLI-00602765	CSI-CLI-00605983	1295
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New Features in 12.2-Based Limited Lifetime Releases, Part 3 (12.2 X Releases)	CSI-CLI-00497145	CSI-CLI-00499319	1298
Cisco IOS Quality of Service Solutions Configuration Guide	CSI-CLI-00588233	CSI-CLI-00588758	1299
Cisco IOS Quality of Service Solutions Command Reference	CSI-CLI-00588759	CSI-CLI-00589145	1300
Cisco 7000 Family Routers Release Notes; Channel Interface Processor Microcode Release Note and Microcode Upgrade Requirements	CSI-CLI-00441051	CSI-CLI-00441576	1301
Release Notes for Cisco AS5300 Universal Access Servers for Cisco IOS Release 12.2 XA	CSI-CLI-00551113	CSI-CLI-00551167	1302
Release Notes for Cisco AS5350 Universal Access Servers for Cisco IOS Release 12.2 XA	CSI-CLI-00551233	CSI-CLI-00551287	1303
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Release Notes for Cisco 6400 Carrier-Class Broadband Aggregator for IOS Release 12.2 B	CSI-CLI-00551345	CSI-CLI-00551493	1309
Release Notes for Cisco CVA120 Series Cable Voice Adapter for Cisco IOS Release 12.2 XA	CSI-CLI-00541841	CSI-CLI-00541884	1310
Cisco Integrated Communications System 7750 Release Notes	CSI-CLI-00551630	CSI-CLI-00551756	1311
Release Notes for Cisco IGX 8400 Series Univeersal Router Module for Cisco IOS Release 12.2 XB	CSI-CLI-00541933	CSI-CLI-00541965	1312
Cisco uBR10012 Cable Router Release Notes	CSI-CLI-00551859	CSI-CLI-00552004	1313
Release Notes for Cisco uBR7100 Series Cable Routers for Cisco IOS Release 12.2 BC	CSI-CLI-00551545	CSI-CLI-00551629	1314

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Release Notes for Cisco uBR7200 Series Cable Routers for Cisco IOS Release 12.2 BC	CSI-CLI-00551757	CSI-CLI-00551858	1315
Cisco IOS Security Configuration Guide, Release 12.2	CSI-CLI-00589146	CSI-CLI-00589793	1316
Cisco IOS Security Command Reference, Release 12.2	CSI-CLI-00589794	CSI-CLI-00590313	1317
System Error Messages for 12.2T	CSI-CLI-00576642	CSI-CLI-00576953	1318
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Session Initiation Protocol Gateway Call Flows	CSI-CLI-00600551	CSI-CLI-00600604	1321
Cisco SOHO Series Routers Release Notes	CSI-CLI-00548904	CSI-CLI-00549043	1322
Cisco IOS Switching Services Configuration Guide, Release 12.2	CSI-CLI-00590314	CSI-CLI-00590883	1323
Cisco IOS Switching Services Command Reference, Release 12.2	CSI-CLI-00590884	CSI-CLI-00591396	1324
Cisco IOS Terminal Services Configuration Guide, Release 12.2	CSI-CLI-00591397	CSI-CLI-00591648	1325
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Cisco IOS Voice, Video, and Fax Configuration Guide, Release 12.2	CSI-CLI-00591939	CSI-CLI-00593019	1328
Cisco IOS Voice, Video, and Fax Command Reference, Release 12.2	CSI-CLI-00593020	CSI-CLI-00593636	1329
Cisco IOS Wide-Area Networking Configuration Guide, Release 12.2	CSI-CLI-00607050	CSI-CLI-00607534	1330
Cisco IOS Wide-Area Networking Command Reference, Release 12.2	CSI-CLI-00594550	CSI-CLI-00595188	1331

IOS 12.3

DESCRIPTION	BEG BATES	END BATES	Ex. No.
IOS 12.3 Copyright Application	CSI-CLI-00356524	CSI-CLI-00356527	3031
IOS 12.3: Deposit Documentation Link	CSI-CLI-00403872 CSI-CLI-00403874	CSI-CLI-00403872 CSI-CLI-00403874	1332
IOS 12.3: Source Code	CSI-CLI-04588161	CSI-CLI-04588211	1333
12.3T System Message Guide	CSI-CLI-04858083	CSI-CLI-04859006	1334
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Cisco IOS System Messages, Volume 2	CSI-CLI-04859007	CSI-CLI-04859965	1336
Cisco 12.3(1a)BW New Features	CSI-CLI-04859966	CSI-CLI-04860038	1337
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DESCRIPTION	BEG BATES	END BATES	Ex. No.
New Features in Release 12.3(2)XF	CSI-CLI-04861196	CSI-CLI-04861222	1343
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New Features in Release 12.3(7)T	CSI-CLI-04861981	CSI-CLI-04864903	1349
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Cisco 800 Series Routers	CSI-CLI-04857330	CSI-CLI-04857402	1352
Cisco 1700 Series Routers	CSI-CLI-04827613	CSI-CLI-04827735	1353
Cisco 2600 Series Routers	CSI-CLI-04827736	CSI-CLI-04827770	1354
Cisco 3200 Series Mobile Access Router	CSI-CLI-04857403	CSI-CLI-04857441	1355
Cisco 3600 Series Routers	CSI-CLI-04857442	CSI-CLI-04857461	1356
Cisco 3700 Series Routers	CSI-CLI-04857462	CSI-CLI-04857483	1357
Cisco 7000 Family Routers	CSI-CLI-04857484	CSI-CLI-04857586	1358
Catalyst 6000 Family	CSI-CLI-04857587	CSI-CLI-04857641	1359
Cisco Gatekeeper External Interface Reference, Version 4.3	CSI-CLI-04866678	CSI-CLI-04866859	1360
Cisco IAD 2430 Series Integrated Access Devices	CSI-CLI-04857642	CSI-CLI-04857657	1361
Cisco Integrated Communications System 7750	CSI-CLI-04857658	CSI-CLI-04857733	1362
Cisco IOS AppleTalk Command Reference	CSI-CLI-04827771	CSI-CLI-04827942	1363
Cisco IOS Bridging and IBM Networking Command Reference, Volume 1: Bridging, Release 12.3	CSI-CLI-04827943	CSI-CLI-04828198	1364
Cisco IOS Bridging and IBM Networking Command Reference, Volume 2: IBM Networking, Release 12.3	CSI-CLI-04828199	CSI-CLI-04828905	1365
Cisco IOS Bridging and IBM Networking Command Reference, Volume 1: Bridging, Release 12.3T	CSI-CLI-04828906	CSI-CLI-04829204	1366
Cisco IOS Bridging and IBM Networking Command Reference, Volume 2: IBM Networking, Release 12.3T	CSI-CLI-04829205	CSI-CLI-04830121	1367
Cisco IOS Commands Master List, Release 12.3	CSI-CLI-04826356	CSI-CLI-04826621	1368
Cisco IOS Commands Master List, Release 12.3T	CSI-CLI-04826622	CSI-CLI-04826828	1369
Cisco IOS Configuration Fundamentals and Network Management Command Reference, Release 12.3	CSI-CLI-04830122	CSI-CLI-04831297	1370
Cisco IOS Configuration Fundamentals and Network Management Command Reference, Release 12.3T	CSI-CLI-04831298	CSI-CLI-04832735	1371
Cisco IOS Debug Command Reference, Release 12.3	CSI-CLI-04867799	CSI-CLI-04869090	1372
Cisco IOS Debug Command Reference, Release 12.3T	CSI-CLI-04833262	CSI-CLI-04835726	1373

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Cisco IOS DECnet Command Reference	CSI-CLI-04835727	CSI-CLI-04835817	1374
Cisco IOS Dial Technologies Command Reference, Release 12.3	CSI-CLI-04836783	CSI-CLI-04837671	1375
Cisco IOS Dial Technologies Command Reference, Release 12.3T	CSI-CLI-04837672	CSI-CLI-04839149	1376
Cisco IOS Interface and Hardware Component Command Reference, Release 12.3	CSI-CLI-04832736	CSI-CLI-04833261	1377
Cisco IOS Interface and Hardware Component Command Reference, Release 12.3T	CSI-CLI-04835818	CSI-CLI-04836782	1378
Cisco IOS IP Command Reference, Volume 1: Addressing and Services, Release 12.3	CSI-CLI-04839150	CSI-CLI-04839568	1379
Cisco IOS IP Command Reference, Volume 2: Routing Protocols, Release 12.3	CSI-CLI-04840150	CSI-CLI-04840872	1380
Cisco IOS IP Command Reference, Volume 3: Multicast, Release 12.3	CSI-CLI-04841717	CSI-CLI-04842034	1381
Cisco IOS IP Command Reference, Volume 4: IP Mobility, Release 12.3	CSI-CLI-04842390	CSI-CLI-04842502	1382
Cisco IOS IP Command Reference, Volume 1: Addressing and Services, Release 12.3T	CSI-CLI-04839569	CSI-CLI-04840149	1383
Cisco IOS IP Command Reference, Volume 2: Routing Protocols, Release 12.3T	CSI-CLI-04840873	CSI-CLI-04841716	1384
Cisco IOS IP Command Reference, Volume 3: Multicast, Release 12.3T	CSI-CLI-04842035	CSI-CLI-04842389	1385
Cisco IOS IP Command Reference, Volume 4: IP Mobility, Release 12.3T	CSI-CLI-04843170	CSI-CLI-04843338	1386
Cisco IOS IPv6 Configuration Library	CSI-CLI-04845101	CSI-CLI-04845654	1387
Cisco IOS IPv6 Command Reference	CSI-CLI-04847675	CSI-CLI-04848655	1388
Cisco IOS ISO CLNS Command Reference	CSI-CLI-04848656	CSI-CLI-04848849	1389
Cisco IOS Mobile Wireless Command Reference, Release 12.3T	CSI-CLI-04842503	CSI-CLI-04842951	1390
Cisco IOS Mobile Wireless Command Reference, Release 12.3	CSI-CLI-04870072	CSI-CLI-04870185	1391
Cisco IOS New and Modified Commands, Release 12.3	CSI-CLI-04826829	CSI-CLI-04826922	1392
Cisco IOS New, Modified, Removed, and Replaced Commands, Release 12.3 T	CSI-CLI-04826944	CSI-CLI-04827000	1393
Cisco IOS Novell IPX Command Reference	CSI-CLI-04842952	CSI-CLI-04843169	1394
Cisco IOS Quality of Service Solutions Command Reference, Release 12.3	CSI-CLI-04843339	CSI-CLI-04843748	1395
Cisco IOS Quality of Service Solutions Command Reference, Release 12.3T	CSI-CLI-04843749	CSI-CLI-04844376	1396
Cisco IOS Release 12.3 Cross-Platform Release Notes	CSI-CLI-04845655	CSI-CLI-04845898	1397
Cisco IOS Release 12.3T Cross-Platform Release Notes	CSI-CLI-04845899	CSI-CLI-04846305	1398
Cisco IOS Security Command Reference, Release 12.3	CSI-CLI-04844377	CSI-CLI-04845100	1399

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Cisco IOS Security Command Reference, Release 12.3T	CSI-CLI-04846306	CSI-CLI-04847423	1400
Cisco IOS Service Selection Gateway Command Reference, Release 12.3T	CSI-CLI-04847424	CSI-CLI-04847656	1401
About Cisco IOS Software Documentation	CSI-CLI-04847657	CSI-CLI-04847674	1402
Cisco IOS Switching Services Command Reference, Release 12.3	CSI-CLI-04848850	CSI-CLI-04849526	1403
Cisco IOS Terminal Services Command Reference, Release 12.3	CSI-CLI-04849527	CSI-CLI-04849763	1404
Cisco IOS Terminal Services Command Reference, Release 12.3T	CSI-CLI-04849764	CSI-CLI-04850040	1405
Cisco IOS Voice Command Reference, Release 12.3T	CSI-CLI-04850041	CSI-CLI-04852717	1406
Cisco IOS Wide-Area Networking Command Reference, Release 12.3	CSI-CLI-04852718	CSI-CLI-04853479	1407
Cisco IOS Wide-Area Networking Command Reference, Release 12.3T	CSI-CLI-04853480	CSI-CLI-04854401	1408
Cisco VG200 Series Analog Gateway	CSI-CLI-04857734	CSI-CLI-04857746	1409
Caveats for Cisco IOS Release 12.3	CSI-CLI-04827001	CSI-CLI-04827612	1410
New Features in Cisco IOS Release 12.3	CSI-CLI-04826923	CSI-CLI-04826943	1411
Session Initiation Protocol Gateway Call Flows	CSI-CLI-04870186	CSI-CLI-04870285	1412
Tools, Maintenance, and Troubleshooting Tips for Cisco IOS Software	CSI-CLI-04858055	CSI-CLI-04858056	1413

IOS 12.4

DESCRIPTION	BEG BATES	END BATES	Ex. No.
IOS 12.4 Copyright Application	CSI-CLI-00356486	CSI-CLI-00356489	3033
IOS 12.4: Source Code	CSI-CLI-00403873	CSI-CLI-00403873	1414
IOS 12.4: Source Code	CSI-CLI-04587868	CSI-CLI-04587918	1415
About Cisco IOS Software Documentation for Release 12.4	CSI-CLI-00471220	CSI-CLI-00471237	1416
Cisco IOS IP Addressing Services Command Reference, Release 12.4	CSI-CLI-00407780	CSI-CLI-00408073	1417
Cisco IOS IP Addressing Services Command Reference, Release 12.4T	CSI-CLI-00430084	CSI-CLI-00430381	1418
Cisco IOS IP Application Services Command Reference, Release 12.4T	CSI-CLI-00420496	CSI-CLI-00420837	1419
Cisco IOS IP Application Services Command Reference, Release 12.4	CSI-CLI-00408074	CSI-CLI-00408380	1420
Cisco IOS AppleTalk Configuration Guide, Release 12.4	CSI-CLI-00509118	CSI-CLI-00509234	1421
Cisco IOS AppleTalk Command Reference, Release 12.4	CSI-CLI-00404055	CSI-CLI-00404215	1422
Cisco IOS AppleTalk Command Reference, Release 12.4T	CSI-CLI-00416976	CSI-CLI-00417136	1423
Cisco IOS Asynchronous Transfer Mode Configuration Guide, Release 12.4	CSI-CLI-00509235	CSI-CLI-00509541	1424

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Cisco IOS Asynchronous Transfer Mode Command Reference, Release 12.4	CSI-CLI-00404216	CSI-CLI-00404561	1425
Cisco IOS Asynchronous Transfer Mode Command Reference, Release 12.4T	CSI-CLI-00417137	CSI-CLI-00417480	1426
Cisco IOS Broadband and DSL Configuration Guide, Release 12.4	CSI-CLI-00509596	CSI-CLI-00510223	1427
Cisco IOS Bridging and IBM Networking Configuration Guide, Release 12.4	CSI-CLI-00509542	CSI-CLI-00509595	1428
Cisco IOS Broadband Access Aggregation and DSL Command Reference, Release 12.4	CSI-CLI-00404562	CSI-CLI-00404665	1429
Cisco IOS Broadband Access Aggregation and DSL Command Reference, Release 12.4T	CSI-CLI-00416872	CSI-CLI-00416975	1430
Cisco IOS Bridging Command Reference, Release 12.4	CSI-CLI-00404666	CSI-CLI-00404883	1431
Cisco IOS Bridging Command Reference, Release 12.4T	CSI-CLI-00417481	CSI-CLI-00417698	1432
Cisco IOS Configuration Fundamentals Configuration Guide, Release 12.4	CSI-CLI-00510224	CSI-CLI-00510661	1433
Cisco IOS Configuration Fundamentals Command Reference, Release 12.4T	CSI-CLI-00417699	CSI-CLI-00418521	1434
Cisco IOS Debug Command Reference, Release 12.4T	CSI-CLI-00426625	CSI-CLI-00428701	1435
Cisco IOS Debug Command Reference, Release 12.4	CSI-CLI-00404884	CSI-CLI-00406943	1436
Cisco IOS DECnet Command Reference, Release 12.4	CSI-CLI-00416149	CSI-CLI-00416234	1437
Cisco IOS DECnet Command Reference, Release 12.4T	CSI-CLI-00418522	CSI-CLI-00418607	1438
Cisco IOS DECnet Configuration Guide, Release 12.4	CSI-CLI-00510662	CSI-CLI-00510731	1439
Cisco IOS Dial Technologies Command Reference, Release 12.4T	CSI-CLI-00418608	CSI-CLI-00419659	1440
Cisco IOS Dial Technologies Command Reference, Release 12.4	CSI-CLI-00414541	CSI-CLI-00415746	1441
Cisco IOS Dial Technologies Configuration Guide, Release 12.4	CSI-CLI-00510732	CSI-CLI-00511778	1442
Cisco IOS Mobile Wireless Gateway GPRS Support Node Command Reference, Release 12.4T	CSI-CLI-00410648	CSI-CLI-00410933	1443
Cisco IOS Mobile Wireless Home Agent Command Reference, Release 12.4T	CSI-CLI-00410934	CSI-CLI-00410991	1444
Cisco IOS Interface and Hardware Component Configuration Guide, Release 12.4	CSI-CLI-00512604	CSI-CLI-00513916	1445
Cisco IOS IBM Networking Command Reference, Release 12.4	CSI-CLI-00406944	CSI-CLI-00407779	1446
Cisco IOS IBM Networking Command Reference, Release 12.4T	CSI-CLI-00419660	CSI-CLI-00420495	1447

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Cisco IOS Interface and Hardware Component Command Reference, Release 12.4	CSI-CLI-00409822	CSI-CLI-00410647	1448
Cisco IOS Interface and Hardware Component Command Reference, Release 12.4T	CSI-CLI-00428702	CSI-CLI-00429527	1449
Cisco IOS IP Application Services Configuration Guide, Release 12.4	CSI-CLI-00512250	CSI-CLI-00512603	1450
Cisco IOS IP Addressing Services Configuration Guide, Release 12.4	CSI-CLI-00511779	CSI-CLI-00512249	1451
Cisco IOS IP Mobility Configuration Guide Release 12.4	CSI-CLI-00514015	CSI-CLI-00514506	1452
Cisco IOS IP Multicast Configuration Guide, Release 12.4	CSI-CLI-00514507	CSI-CLI-00514862	1453
Cisco IOS IP Routing Protocols Configuration Guide, Release 12.4	CSI-CLI-00514863	CSI-CLI-00516124	1454
Cisco IOS IP SLAs Configuration Guide, Release 12.4	CSI-CLI-00516125	CSI-CLI-00516544	1455
Cisco IOS IP Switching Configuration Guide, Release 12.4	CSI-CLI-00516545	CSI-CLI-00516739	1456
Cisco IOS IP Application Services Configuration Guide, Release 12.4T	CSI-CLI-00471055	CSI-CLI-00471093	1457
Cisco IOS IP Switching Command Reference, Release 12.4	CSI-CLI-00409200	CSI-CLI-00409307	1458
Cisco IOS IP Switching Command Reference, Release 12.4T	CSI-CLI-00422011	CSI-CLI-00422130	1459
Cisco IOS IPv6 Configuration Guide, Release 12.4	CSI-CLI-00516740	CSI-CLI-00516770	1460
Cisco IOS Novell IPX Command Reference, Release 12.4	CSI-CLI-00409488	CSI-CLI-00409695	1461
Cisco IOS Novell IPX Command Reference, Release 12.4T	CSI-CLI-00422435	CSI-CLI-00422642	1462
Cisco IOS ISO CLNS Configuration Guide, Release 12.4	CSI-CLI-00513917	CSI-CLI-00514014	1463
Cisco IOS ISO CLNS Command Reference, Release 12.4	CSI-CLI-00409308	CSI-CLI-00409487	1464
Cisco IOS ISO CLNS Command Reference, Release 12.4T	CSI-CLI-00422131	CSI-CLI-00422310	1465
Cisco IOS LAN Switching Configuration Guide, Release 12.4	CSI-CLI-00516771	CSI-CLI-00517175	1466
Cisco IOS LAN Switching Command Reference, Release 12.4	CSI-CLI-00409696	CSI-CLI-00409821	1467
Cisco IOS LAN Switching Command Reference, Release 12.4T	CSI-CLI-00422311	CSI-CLI-00422434	1468
Cisco IOS IP Multicast Command Reference, Release 12.4	CSI-CLI-00416395	CSI-CLI-00416717	1469
Cisco IOS New, Modified, Replaced, and Removed Commands, Release 12.4(2)T	CSI-CLI-00593637	CSI-CLI-00594035	1470
Cisco IOS Multiprotocol Label Switching Configuration Guide, Release 12.4	CSI-CLI-00517907	CSI-CLI-00519576	1471

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Cisco IOS IP Multicast Command Reference, Release 12.4T	CSI-CLI-00424546	CSI-CLI-00424866	1472
Cisco IOS IP Mobility Command Reference, Release 12.4	CSI-CLI-00416235	CSI-CLI-00416394	1473
Cisco IOS IP Mobility Command Reference, Release 12.4T	CSI-CLI-00420838	CSI-CLI-00420997	1474
Cisco IOS Multiprotocol Label Switching Command Reference, Release 12.4	CSI-CLI-00415747	CSI-CLI-00416148	1475
Cisco IOS Multiprotocol Label Switching Command Reference, Release 12.4T	CSI-CLI-00426139	CSI-CLI-00426556	1476
Cisco IOS Mobile Wireless Gateway GPRS Support Node Configuration Guide, Release 12.4	CSI-CLI-00517176	CSI-CLI-00517600	1477
Cisco IOS Mobile Wireless Home Agent Configuration Guide, Release 12.4	CSI-CLI-00517601	CSI-CLI-00517680	1478
Cisco IOS Mobile Wireless Packet Data Serving Node Configuration Guide, Release 12.4	CSI-CLI-00517681	CSI-CLI-00517796	1479
Cisco IOS Mobile Wireless Radio Access Networking Configuration Guide, Release 12.4	CSI-CLI-00517797	CSI-CLI-00517906	1480
Cisco IOS NetFlow Configuration Guide, Release 12.4	CSI-CLI-00519577	CSI-CLI-00520095	1481
Cisco IOS NetFlow Command Reference, Release 12.4	CSI-CLI-00509028	CSI-CLI-00509117	1482
Cisco IOS NetFlow Configuration Guide, Release 12.4T	CSI-CLI-00508838	CSI-CLI-00508913	1483
New Features in Release 12.4(2)T	CSI-CLI-00594116	CSI-CLI-00594549	1484
12.4(x) New Features	CSI-CLI-00594036	CSI-CLI-00594115	1485
Cisco IOS NetFlow Command Reference, Release 12.4T	CSI-CLI-00422643	CSI-CLI-00422750	1486
Cisco IOS Network Management Configuration Guide Release 12.4	CSI-CLI-00520096	CSI-CLI-00521034	1487
Cisco IOS Network Management Command Reference, Release 12.4	CSI-CLI-00411170	CSI-CLI-00411742	1488
Cisco IOS Network Management Command Reference, Release 12.4T	CSI-CLI-00422751	CSI-CLI-00423334	1489
Cisco IOS Novell IPX Configuration Guide, Release 12.4	CSI-CLI-00521035	CSI-CLI-00521157	1490
Cisco IOS Optimized Edge Routing Configuration Guide, Release 12.4	CSI-CLI-00521158	CSI-CLI-00521313	1491
Cisco IOS Optimized Edge Routing Configuration Guide, Release 12.4T	CSI-CLI-00471094	CSI-CLI-00471219	1492
Cisco IOS Optimized Edge Routing Command Reference, Release 12.4	CSI-CLI-00416718	CSI-CLI-00416871	1493
Cisco IOS Optimized Edge Routing Command Reference, Release 12.4T	CSI-CLI-00430382	CSI-CLI-00430539	1494
Cisco IOS Mobile Wireless Packet Data Serving Node Command Reference, Release 12.4T	CSI-CLI-00410992	CSI-CLI-00411137	1495

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Cisco IOS Quality of Service Solutions Command Reference, Release 12.4T	CSI-CLI-00429528	CSI-CLI-00430083	1496
Cisco IOS Quality of Service Solutions Configuration Guide, Release 12.4	CSI-CLI-00521314	CSI-CLI-00522503	1497
Cisco IOS Quality of Service Solutions Command Reference, Release 12.4	CSI-CLI-00411743	CSI-CLI-00412296	1498
Cisco IOS Mobile Wireless Radio Access Networking Command Reference, Release 12.4T	CSI-CLI-00411138	CSI-CLI-00411169	1499
Cisco IOS Release 12.4 Release Notes	CSI-CLI-00544533	CSI-CLI-00544992	1500
Cisco IOS Release 12.4T Release Notes	CSI-CLI-00544368	CSI-CLI-00544532	1501
Cisco IOS IP Routing Protocols Command Reference, Release 12.4	CSI-CLI-00408381	CSI-CLI-00409199	1502
Cisco IOS IP Routing Protocols Command Reference, Release 12.4T	CSI-CLI-00420998	CSI-CLI-00421826	1503
Cisco IOS Security Configuration Guide, Release 12.4	CSI-CLI-00522504	CSI-CLI-00525377	1504
Cisco IOS Security Command Reference, Release 12.4	CSI-CLI-00412297	CSI-CLI-00413526	1505
Cisco IOS Security Configuration Guide, Release 12.4T	CSI-CLI-00508914	CSI-CLI-00509027	1506
Cisco IOS Security Command Reference, Release 12.4T	CSI-CLI-00424867	CSI-CLI-00426138	1507
Cisco IOS IP SLAs Command Reference, Release 12.4T	CSI-CLI-00421827	CSI-CLI-00422010	1508
Cisco IOS System Messages, Volume 1	CSI-CLI-00506950	CSI-CLI-00507871	1509
Cisco IOS System Messages, Volume 2	CSI-CLI-00507872	CSI-CLI-00508837	1510
Cisco IOS Service Selection Gateway Configuration Guide, Release 12.4	CSI-CLI-00525378	CSI-CLI-00525775	1511
Cisco IOS Service Selection Gateway Command Reference, Release 12.4	CSI-CLI-00413527	CSI-CLI-00413756	1512
Cisco IOS Service Selection Gateway Command Reference, Release 12.4T	CSI-CLI-00423335	CSI-CLI-00423576	1513
Cisco IOS Terminal Services Command Reference, Release 12.4	CSI-CLI-00413757	CSI-CLI-00414044	1514
Cisco IOS Terminal Services Command Reference, Release 12.4T	CSI-CLI-00423577	CSI-CLI-00423862	1515
Cisco IOS Terminal Services Configuration Guide, Release 12.4	CSI-CLI-00525776	CSI-CLI-00525992	1516
Using Cisco IOS Software for Release 12.4	CSI-CLI-00471238	CSI-CLI-00471248	1517
Cisco IOS VPDN Command Reference, Release 12.4T	CSI-CLI-00423863	CSI-CLI-00424054	1518
Cisco IOS Wide-Area Networking Configuration Guide, Release 12.4	CSI-CLI-00525993	CSI-CLI-00526586	1519
Cisco IOS Wide-Area Networking Command Reference, Release 12.4	CSI-CLI-00414045	CSI-CLI-00414540	1520
Cisco IOS Wide-Area Networking Command Reference, Release 12.4T	CSI-CLI-00424055	CSI-CLI-00424545	1521
Cisco IOS Wireless LAN Command Reference, Release 12.4T	CSI-CLI-00426557	CSI-CLI-00426624	1522

IOS 15.0

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IOS 15.0 Copyright Application	CSI-CLI-00356480	CSI-CLI-00356483	1414
IOS 15.0: Source Code	CSI-CLI-04624361	CSI-CLI-04624412	1523
Cisco IOS Carrier Ethernet Configuration Guide; Release 15.0	CSI-CLI-00054598	CSI-CLI-00054759	1524
Cisco IOS Configuration Fundamentals Configuration Guide; Release 15.0	CSI-CLI-00054760	CSI-CLI-00055289	1525
Cisco IOS Security Configuration Guide: Securing the Control Plane; Release 15.0	CSI-CLI-00055290	CSI-CLI-00055403	1526
Cisco IOS Bridging and IBM Networking Configuration Guide, Release 15.0	CSI-CLI-00055404	CSI-CLI-00056244	1527
Cisco IOS Software Activation Configuration Guide; Release 15.0	CSI-CLI-00056245	CSI-CLI-00056398	1528
Cisco IOS Service Advertisement Framework Configuration Guide, Release 15.0	CSI-CLI-00056399	CSI-CLI-00056468	1529
Cisco IOS Dial Technologies Configuration Guide; Release 15.0M	CSI-CLI-00056469	CSI-CLI-00057863	1530
Cisco IOS DECnet Configuration Guide; Release 15.0	CSI-CLI-00057864	CSI-CLI-00057923	1531
Cisco IOS LAN Switching Configuration Guide; Release 15.0M	CSI-CLI-00057924	CSI-CLI-00058221	1532
Cisco IOS IP Routing: EIGRP Configuration Guide; 15.0	CSI-CLI-00058222	CSI-CLI-00058389	1533
Cisco IOS IP Multicast Configuration Guide, Release 15.0M	CSI-CLI-00058390	CSI-CLI-00059126	1534
Cisco IOS IP Application Services Configuration Guide, Release 15.0	CSI-CLI-00059127	CSI-CLI-00059702	1535
Cisco IOS Mobile Wireless Radio Access Networking Configuration Guide, Release 15.0	CSI-CLI-00059703	CSI-CLI-00059766	1536
Cisco IOS Interface and Hardware Component Configuration Guide; Release 15.0M	CSI-CLI-00059767	CSI-CLI-00060136	1537
Cisco IOS IP Mobility Configuration Guide; Release 15.0	CSI-CLI-00060137	CSI-CLI-00060514	1538
Cisco IOS IPv6 Configuration Guide; Release 15.0M	CSI-CLI-00060515	CSI-CLI-00061352	1539
Cisco IOS Flexible NetFlow Configuration Guide; Release 15.0	CSI-CLI-00061353	CSI-CLI-00061542	1540
Cisco IOS IP Addressing Services Configuration Guide, Release 15.0	CSI-CLI-00061543	CSI-CLI-00062172	1541
Cisco IOS IP Switching Configuration Guide; Release 15.0M	CSI-CLI-00062173	CSI-CLI-00062497	1542
Cisco IOS NetFlow Configuration Guide, Release 15.0(1)M	CSI-CLI-00062498	CSI-CLI-00062919	1543

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Cisco IOS Mobile Wireless Gateway GPRS Support Node Configuration Guide; Release 15.0	CSI-CLI-00062920	CSI-CLI-00063323	1544
Cisco IOS IP Routing: OSPF Configuration Guide; Release 15.0	CSI-CLI-00063324	CSI-CLI-00063599	1545
Cisco IOS IP Routing: BFD Configuration Guide; Release 15.0	CSI-CLI-00063600	CSI-CLI-00063681	1546
Cisco IOS Multiprotocol Label Switching Configuration Guide; Release 15.0M	CSI-CLI-00063682	CSI-CLI-00065583	1547
Cisco IOS IP Routing: BGP Configuration Guide; Release 15.0	CSI-CLI-00065584	CSI-CLI-00066171	1548
Cisco IOS IP Routing: ISIS Configuration Guide; Release 15.0	CSI-CLI-00066172	CSI-CLI-00066267	1549
Supplementary Services Features for FXS Ports on Cisco IOS Voice Gateways Configuration Guide, Release 15.0	CSI-CLI-00066268	CSI-CLI-00066431	1550
Configuring AAA for Cisco Voice Gateways; Release 15.0	CSI-CLI-00066432	CSI-CLI-00066521	1551
Dial Peer Configuration on Voice Gateway Routers; Release 15.0	CSI-CLI-00066522	CSI-CLI-00066623	1552
Cisco Unified Border Element with Gatekeeper Configuration Guide; Release 15.0(1)	CSI-CLI-00066624	CSI-CLI-00066677	1553
Cisco IOS IP SLAs Configuration Guide; Release 15.0	CSI-CLI-00066678	CSI-CLI-00067023	1554
Cisco IOS SIP Configutation Guide; Release 15.0	CSI-CLI-00067024	CSI-CLI-00067784	1555
Cisco IOS VPDN Configuration Guide; Release 15.0	CSI-CLI-00067785	CSI-CLI-00068142	1556
Cisco IOS MGCP and Related Protocols Configuration Guide; Release 15.0	CSI-CLI-00068143	CSI-CLI-00068342	1557
Cisco Unified Border Element Configuration Guide; Software Version 1.1,1.2,1.3	CSI-CLI-00068343	CSI-CLI-00068644	1558
Cisco IOS Security Configuration Guide: Secure Connectivity; Release 15.0	CSI-CLI-00068645	CSI-CLI-00070055	1559
Cisco IOS Security Configuration Guide; Securing the Data Plane Configuration Guide; Release 15.0	CSI-CLI-00070056	CSI-CLI-00071125	1560
Cisco Unified Communications Manager and Cisco IOS Interoperability Guide; Release 15.0	CSI-CLI-00071126	CSI-CLI-00071345	1561
Cisco IOS Fax, Modem, and Text Support over IP Configuration Guide; Release 15.0	CSI-CLI-00071346	CSI-CLI-00071583	1562
Cisco IOS Terminal Services Configuration Guide; Release 15.0	CSI-CLI-00071584	CSI-CLI-00071880	1563
Cisco IOS Voice Port Configuration Guide, Release 15.0	CSI-CLI-00071881	CSI-CLI-00072054	1564
Cisco IOS Wide-Area Networking Configuration Guide; IP Release 15.0	CSI-CLI-00072055	CSI-CLI-00072717	1565

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Cisco IOS ISDN Voice Configuration Guide; Release 15.0	CSI-CLI-00072718	CSI-CLI-00073069	1566
Cisco IOS H.323 Configuration Guide; Release 15.0(1)M	CSI-CLI-00073070	CSI-CLI-00073329	1567
Cisco IOS QoS Configuration Guide	CSI-CLI-00073330	CSI-CLI-00073575	1568
Cisco IOS Optimized Edge Routing Configuration Guide, IP Release 15.0	CSI-CLI-00073576	CSI-CLI-00074027	1569
Cisco IOS Asynchronous Transfer Mode Configuration Guide, Release 15.0	CSI-CLI-00216957	CSI-CLI-00217612	1570
Cisco GGSN Release 8.0 Command Reference; Cisco IOS Release 12.4(24)T	CSI-CLI-00223197	CSI-CLI-00223866	1571
Cisco IOS Mobile Wireless Home Agent Command Reference	CSI-CLI-00223867	CSI-CLI-00224022	1572
Cisco IOS Mobile Wireless Radio Access Networking Command Reference	CSI-CLI-00224023	CSI-CLI-00224078	1573
Cisco IOS Wireless LAN Command Reference	CSI-CLI-00226300	CSI-CLI-00226414	1574
Cisco IOS Service Selection Gateway Command Reference	CSI-CLI-00226415	CSI-CLI-00226709	1575
Cisco IOS Dial Technologies Command Reference	CSI-CLI-00267773	CSI-CLI-00268938	1576
Cisco IOS IP Multicast Command Reference	CSI-CLI-00271385	CSI-CLI-00271914	1577
Cisco IOS VPDN Command Reference	CSI-CLI-00274107	CSI-CLI-00274387	1578
Cisco IOS Quality of Service Solutions Command Reference	CSI-CLI-00275376	CSI-CLI-00276457	1579
Cisco IOS IP Switching Command Reference	CSI-CLI-00276458	CSI-CLI-00276837	1580
Cisco IOS Flexible NetFlow Command Reference	CSI-CLI-00314732	CSI-CLI-00314943	1581
Cisco IOS IP Addressing Services Command Reference	CSI-CLI-00316210	CSI-CLI-00316776	1582
Cisco IOS IP Application Services Command Reference	CSI-CLI-00316777	CSI-CLI-00317412	1583
Cisco IOS IP Routing: EIGRP Command Reference	CSI-CLI-00317634	CSI-CLI-00317847	1584
Cisco IOS IP Routing: ISIS Command Reference	CSI-CLI-00318351	CSI-CLI-00318532	1585
Cisco IOS IP Routing: BGP Command Reference	CSI-CLI-00319252	CSI-CLI-00319764	1586
Cisco IOS Network Management Command Reference	CSI-CLI-00319765	CSI-CLI-00321189	1587
Cisco IOS Terminal Services	CSI-CLI-00324036	CSI-CLI-00324389	1588
Cisco IOS Mobile Wireless Packet Data Serving Node Command Reference	CSI-CLI-00325497	CSI-CLI-00325713	1589
Cisco IOS AppleTalk Command Reference	CSI-CLI-00332893	CSI-CLI-00333134	1590
Cisco IOS Asynchronous Transfer Mode Command Reference	CSI-CLI-00333135	CSI-CLI-00333593	1591
Cisco IOS Broadband Access Aggregation and DSL Command Reference	CSI-CLI-00333594	CSI-CLI-00333809	1592
Cisco IOS Bridging Command Reference	CSI-CLI-00333810	CSI-CLI-00334055	1593
Cisco IOS IBM Networking Command Reference	CSI-CLI-00334056	CSI-CLI-00335164	1594

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Cisco IOS Debug Command Reference	CSI-CLI-00335165	CSI-CLI-00337966	1595
Cisco IOS IP Mobility Command Reference	CSI-CLI-00337967	CSI-CLI-00338200	1596
Cisco IOS Carrier Ethernet Command Reference	CSI-CLI-00338201	CSI-CLI-00338480	1597
Cisco IOS ISO CLNS Command Reference	CSI-CLI-00338481	CSI-CLI-00338696	1598
Cisco IOS IP Routing: OSPF Command Reference	CSI-CLI-00338697	CSI-CLI-00338940	1599
Cisco IOS Novell IPX Command Reference	CSI-CLI-00338941	CSI-CLI-00339290	1600
Cisco IOS IPv6 Command Reference	CSI-CLI-00339291	CSI-CLI-00341075	1601
Cisco IOS NetFlow Command Reference	CSI-CLI-00341076	CSI-CLI-00341328	1602
Cisco IOS Optimized Edge Routing Command Reference	CSI-CLI-00341329	CSI-CLI-00341632	1603
Cisco IOS Security Command Reference	CSI-CLI-00341633	CSI-CLI-00344234	1604
Cisco IOS IP SLAs Command Reference	CSI-CLI-00344235	CSI-CLI-00344774	1605
Cisco IOS Wide-Area Networking Command Reference	CSI-CLI-00344775	CSI-CLI-00345450	1606
Cisco IOS DECnet Command Reference	CSI-CLI-00348572	CSI-CLI-00348689	1607
Cisco IOS Interface and Hardware Component Command Reference	CSI-CLI-00350066	CSI-CLI-00351948	1608

IOS 15.1

DESCRIPTION	BEG BATES	END BATES	Ex. No.
IOS 15.1 Copyright Application	CSI-CLI-00356502	CSI-CLI-00356505	3037
IOS 15.1: Source Code	CSI-CLI-04624310	CSI-CLI-04624360	1609
Cisco IOS DECnet Command Reference	CSI-CLI-00348572	CSI-CLI-00348689	1607
Cisco IOS Interface and Hardware Component Command Reference	CSI-CLI-00350066	CSI-CLI-00351948	1608
Broadband Access Aggregations and DSL Configuration Guide; Cisco IOS Release 15.1M&T	CSI-CLI-00034689	CSI-CLI-00034812	1610
Cisco IOS Service Advertisement Framework Configuration Guide; Release 15.1T	CSI-CLI-00034813	CSI-CLI-00034885	1611
Cisco IOS Bridging and IBM Networking Configuration Guide; Release 15.1	CSI-CLI-00034886	CSI-CLI-00035781	1612
Cisco IOS Carrier Ethernet Configuration Guide; Release 15.1	CSI-CLI-00035782	CSI-CLI-00036059	1613
Cisco IOS IP Routing: ISIS Configuration Guide; Release 15.1	CSI-CLI-00036060	CSI-CLI-00036254	1614
Cisco IOS Software Activation Configuration Guide; Release 15.1	CSI-CLI-00036255	CSI-CLI-00036346	1615
Cisco IOS IP Application Services Configuration Guide; Release 15.1	CSI-CLI-00036347	CSI-CLI-00036926	1616
Cisco IOS IP Switching Configuration Guide; Release 15.1T	CSI-CLI-00036927	CSI-CLI-00037255	1617
Cisco IOS IP Routing: BFD Configuration Guide; Release 15.1	CSI-CLI-00037256	CSI-CLI-00037365	1618

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Supplementary Services Features for FXS Ports on Cisco IOS Voice Gateways ConfiRelease 15.1T	CSI-CLI-00037366	CSI-CLI-00037559	1619
Cisco IOS LAN Switching Configuration Guide; Release 15.1T	CSI-CLI-00037560	CSI-CLI-00037869	1620
Cisco IOS IP Routing: BGP Configuration Guide; Release 15.1	CSI-CLI-00037870	CSI-CLI-00038473	1621
Cisco IOS Multiprotocol Label Switching Configuration Guide; Release 15.1	CSI-CLI-00038474	CSI-CLI-00040379	1622
Cisco IOS IP Multicast Configuration Guide; Release 15.1T	CSI-CLI-00040380	CSI-CLI-00041136	1623
Cisco IOS Flexible NetFlow Configuration Guide; Release 15.1	CSI-CLI-00041137	CSI-CLI-00041336	1624
Cisco IOS IP Addressing Services Configuration Guide	CSI-CLI-00041337	CSI-CLI-00041966	1625
Cisco IOS Security Configuration Guide: Securing the Control Plane; Release 15.1	CSI-CLI-00041967	CSI-CLI-00042082	1626
Cisco IOS IP Routing: OSPF Configuration Guide; Release 15.1	CSI-CLI-00042083	CSI-CLI-00042360	1627
Cisco IOS IP Routing: RIP Configuration Guide; Release 15.1	CSI-CLI-00042361	CSI-CLI-00042438	1628
Cisco IOS ISO CLNS Configuration Guide; Release 15.1T	CSI-CLI-00042439	CSI-CLI-00042536	1629
Cisco IOS Interface and Hardware Component Configuration Guide; Release 15.1T	CSI-CLI-00042537	CSI-CLI-00042910	1630
Cisco IOS IP Mobility Configuration Guide; Release 15.1	CSI-CLI-00042911	CSI-CLI-00043300	1631
Cisco IOS Configuration Fundamentals Configuration Guide; Release 15.1	CSI-CLI-00043301	CSI-CLI-00043838	1632
Cisco IOS IP Routing: EIGRP Configuration Guide, Release 15.1	CSI-CLI-00043839	CSI-CLI-00044004	1633
Cisco IOS IP SLAs Configuration Guide; Release 15.1T	CSI-CLI-00044005	CSI-CLI-00044404	1634
Cisco IOS Performance Routing Configuration Guide; Release 15.1T	CSI-CLI-00044405	CSI-CLI-00044754	1635
Cisco IOS SIP Configuration Guide; Release 15.1	CSI-CLI-00044755	CSI-CLI-00045530	1636
Cisco IOS ISDN Voice Configuration Guide; Release 15.1	CSI-CLI-00045531	CSI-CLI-00045882	1637
Cisco IOS Fax, Modem, and Text Support over IP Configuration Guide; Release 15.1	CSI-CLI-00045883	CSI-CLI-00046120	1638
Cisco IOS Network Management Configuration Guide; Release 15.1	CSI-CLI-00046121	CSI-CLI-00047218	1639
Cisco IOS Mobile Wireless Radio Access Networking Configuration Guide; Release 15.1	CSI-CLI-00047219	CSI-CLI-00047308	1640
Cisco IOS Security Configuration Guide: Securing User Services; Release 15.1	CSI-CLI-00047309	CSI-CLI-00048601	1641

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